Interstate **C**ommission for **W**ater **C**oordination of Central Asia	**BULLETIN № 3 (59)**	September 2012

CONTENTS

MINUTES OF THE REGULAR 59TH MEETING OF THE INTERSTATE COMMISSION FOR WATER COORDINATION (ICWC) OF THE REPUBLIC OF KAZAKHSTAN, KYRGYZ REPUBLIC, REPUBLIC OF TAJIKISTAN, TURKMENISTAN, AND REPUBLIC OF UZBEKISTAN

26 April 2012 Ashgabat city

In attendance were:

ICWC members:

ABISHEV, Islam Almakhanovich	Chair of the Committee of Water Resources under the Ministry of Agriculture of the Republic of Kazakhstan
UZAKBAEV, Chyngysbek Makeshovich	First Deputy Director General of the Water Resources and Land Reclamation Department of the Ministry of Water Resources and Land Reclamation of the Kyrgyz Republic
BOBOKALONOV, Rakhmat	Ministry of Land Reclamation and Water Resources of the Republic of Tajikistan
KHAMRAEV, Shavkat Rakhimovich	Deputy Minister, Head of the Chief Department of Water Resources of the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan

From executive bodies of ICWC:

DUKHOVNY, Victor Abramovich	Director of SIC ICWC, Professor, Honorary Member of ICWC
KADYRNIYAZOV, Burkitbay Tadjiniyazovich	Director of BWO “Amudarya”
KHAMIDOV, Makhmud Khamidovich	Director of BWO “Syrdarya”
MUKHITDINOV, Khayrullo Ergashevich	Head of ICWC Secretarieat

Invitees:

ABDURAKHIM, Ashur	Ambassador Extraordinary and Plenipotentiary of the Republic of Tajikistan in Turkmenistan
NURMAGANBETOV, Demesin Sheralievich	Deputy Chairman of the Executive Committee of International Fund for Saving the Aral Sea
KIPSHAKBAEV, Nariman Kipshakbaevich	Director of the Kazakhstan Office of SIC ICWC, Honorary Member of ICWC
ZHIENBAEV, Musilim Rysmakhanovich	Chief Expert of the Committee of Water Resources under the Ministry of Agriculture of the Republic of Kazakhstan
NURSADYKOV, Darkhan Kuanyshevich	First Secretary of the Pan-Asia Cooperation Department
SEYESENOV, Sembay Baymenovich	Director of the South-Kazakhstan Branch of the Republic State Enterprise "Kazvodkhoz" under the Committee of Water Resources of the Ministry of Agriculture of the Republic of Kazakhstan
KARLIHKANOV, Adilkhan Karlihkanovich	Head of the Aral-Syrdarya Basin Inspectorate
SOROKIN, Denis Anatolyievich	Head of the Regional Information Center of SIC ICWC
KUCHKAROV, Sharifjan Zikrillaevich	Head of the Water Resources Balance and Water-Saving Technologies Development Administration of the Republic of Uzbekistan
KHANMEDOV, Guvanch	Head of the Production Department of the Ministry of Water Resources of Turkmenistan
DUSIMOV, Abdumajid Abdurashitovich	Consul of the Embassy of the Republic of Uzbekistan in Turkmenistan
Chairperson:	TAGANOV Seyitmurad Eyemberdievich, Minister of Water Resources of Turkmenistan

Agenda

1. Results of the non-vegetation period 2011-2012; measures taken to route flood water; Amudarya and Syrdarya rivers limits and regimes fixed for the vegetation period 2012.
2. Progress of the works within the Regional Project "Integrated Water Resources Management in the Fergana Valley" (SIC ICWC) (responsible organizations: SIC ICWC, Ministry of Agriculture and Water Resources of the Republic of

Uzbekistan, State Committee of Water Resources and Land Reclamation of the Kyrgyz Republic, and Ministry of Land Reclamation and Water Resources of the Republic of Tajikistan).

3. Progress of the works within the Regional Project "Canal Automation in the Fergana Valley" (SIC ICWC) (responsible organizations: SIC ICWC and BWO "Syrdarya").
4. Information of the Organizing Committee concerning the preparation for the anniversary International Scientific and Research Conference "Twenty Years of Cooperation in Joint Transboundary Water Resources Management in Central Asia: Methodology, Results, and Outlooks".
5. Consideration of the improved version of the Concept for Developing Information Exchange and Relationship Mechanism Among its Participants in Central Asia;
6. Agenda and venue for the next 60th meeting of ICWC.

Decisions with regard to the first item:

1. Take into consideration the information provided by the BWOs "Amudarya" and "Syrdarya" about the results of the non-vegetation period, progress of water supply to the riparian countries of the Amudarya and Syrdarya river basins, and measures taken to route flood water during the non-vegetation period 2011-2012.
2. Approve the limits on water withdrawal in the Amudarya and Syrdarya river basins (Annex 1) for the vegetation period 2012;
3. The operation modes of the Naryn-Syrdarya multi-reservoir system and Amudarya river basin shall be considered during a joint meeting of the representatives of the energy sector and water sector of Central Asia countries allowing for compliance with approved limits. If this meeting fails to take place or the operation modes cannot be agreed upon, the decision taken in Item 2 with regard to the limits for the Amudarya and Syrdarya river basins shall be invalid.

Decisions with regard to the second item:

1. Approve the outputs of the IWRM-FV Project obtained within the intermediate (fifth) phase (01.03.2011–29.02.2012). Note that the Visions of IWRM Development Based on the Project Experience for the three countries (Kyrgyzstan, Tajikistan, and Uzbekistan) worked out by the National Groups by using the results of the Hydrographic Study show that the developed and implemented IWRM approaches provide a reasonable basis for further improvement of water resources management. Recommend using those when carrying out IWRM projects in these countries.
2. The scientific basis, methodological materials, guidelines, as well as the capacity of the teams of regional and national executors, developed in the course of the work, allow extensively elaborating the IWRM principles over a large territory of Central Asia.

3. When fulfilling the Aral Sea Basin Program 3, the scope of IRWM principles implementation should be expanded in all countries of Central Asia.
4. ICWC members express profound gratitude to the Swiss Agency for Development and Cooperation (SDC) for its financial and technical support to the project and hope for wider cooperation with ICWC organizations in the implementation of new projects planned by SDC under the new strategy of Switzerland in the water sector of Central Asia.

Decisions with regard to the third item:

1. The "Canal Automation in the Fergana Valley" Project (Phases 1-2) has been completely accomplished. After being put into service, the systems of automation and monitoring of the BWO "Syrdarya" facilities and pilot canals (AAC, SFC, KBC) operate well, performing all the functions specified in ToR and, accordingly, the accuracy of the measurement of water level, flow, and mineralization has been improved as well as the quality of voice communication and data transmission from the BWO "Syrdarya" facilities and pilot canals (AAC, SFC, KBC) has been enhanced.
2. Approve the project proposal on the "Canal Automation in the Fergana Valley" Project Phase 3 in the main. Identify the facilities located in the Tajikistan area as the objects of the national project of Tajikistan.
3. Hold the ICWC Secretariat and SIC ICWC liable for asking the Swiss Agency for Development and Cooperation to accelerate the financing of the "Canal Automation in the Fergana Valley" Project Phase 3 and arranging signing of contracts on behalf of ICWC taking into account the proposals given by the Tajikistan party.

Decisions with regard to the fourth item:

1. Approve the draft program of the Central Asian International Scientific and Research Conference "Twenty Years of Cooperation in Joint Transboundary Water Resources Management in Central Asia: Methodology, Results, and Outlooks" submitted to ICWC members for consideration, taking into account the comments and additions made (Appendix 2).
2. Charge SIC ICWC with:
   - distribution of the first notification in accordance with the program;
   - organization of the collection of papers and reports with subsequent publication of the Jubilee Collection.
3. Set the date of the Conference for the second half of September 2012 in Almaty.
4. Charge the Organizing Committee with the definition of the Conference venue.
5. Estimated number of participants is about 200 persons, including up to 20 persons from each participant country.

6. Request the World Bank, Asian Development Bank, UNDP, GIZ, Swiss Agency for Development and Cooperation, and other donors to provide financial assistance for the organization of the Conference.
7. ICWC members shall submit preliminary lists of participants before May 15.

Decisions with regard to the fifth item:

The issue related to the consideration of the improved version of the Concept for Developing Information Exchange and Relationship Mechanism Among its Participants in Central Asia shall be carried over to the next meeting of ICWC.

Decisions with regard to the sixth item:

1. The next 60th anniversary meeting in the Almaty city shall be held in the second half of September 2012;
2. Adopt the agenda for the next 60th meeting of ICWC.

Agenda

1. Results of the vegetation irrigation carried out in 2012; operation mode of the multi-reservoir system and limits for the non-vegetation period 2012-2013 in the Amudarya and Syrdarya river basins (responsible organizations: BWO "Amudarya" and BWO "Syrdarya").
2. Consideration of the improved version of the Concept for Developing Information Exchange and Relationship Mechanism Among its Participants in Central Asia.
3. Agenda and venue for the next 61st meeting of ICWC.

From the Republic of Kazakhstan:	Abishev, I.A.
From the Kyrgyz Republic:	Uzakbaev, Ch.M.
From the Republic of Tajikistan:	Bobokalonov, R.
From Turkmenistan:	Taganov, S.E.
From the Republic of Uzbekistan:	Khamraev, Sh.R.

RESULTS OF THE NON-VEGETATION PERIOD 2011-2012 AND MEASURES TAKEN TO ROUTE FLOOD WATER, AND THE AMUDARYA AND SYRDARYA RIVERS LIMITS AND REGIME OF FIXED FOR THE VEGETATION PERIOD 2012[1]

1. Amudarya river basin

Results of the non-vegetation period 2011-2012 and measures taken to route flood water

Actual water content at the Atamyrat station upstream Garagumdarya for the reporting period of the non-vegetation period 2011-2012, allowing for natural discharges of the Vaksh river, turned out to be higher by 12.8 % than the predicted water content and came to 92.8 %.

By 01.04.2012, the volume of water in the Tuyamuyun reservoir was 3.276 bln m^3.

About 1.047 bln m^3 of water was delivered to the Aral Sea and Priaralie.

Considering the results of the non-vegetation period 2011-2012 over the Amudarya river basin as a whole, it is worthy of note that the period issued well enough for all the countries of the region and with no particular problems at the upper and middle reaches of the Amudarya river.

Some difficulties arisen in the lower reach during the first half of the non-vegetation period because of low inflow to the Tuyamuyun Hydroscheme and lowest possible reserves of water in its reservoirs at the beginning of the non-vegetation period were successfully resolved owing to timely taken coordinated measures aimed at the determination of the Tuyamuyun Hydroscheme operation mode and efficient distribution of water resources with active support from the Ministry of Water Resources of Turkmenistan and Ministry of Water resources and Agriculture of the Republic of Uzbekistan.

The use of the fixed water withdrawal quotas for the reporting non-vegetation period broken down by the countries is as follows:

- the quota for water withdrawal set for the basin as a whole was used 91.4 %: with the quota equal to 15 bln 700.7 mln m^3, the actual water withdrawal volume came to 14 bln 358 mln m^3, in particular:

- the Republic of Tajikistan used 69.2 % of its quota for water withdrawal: with the quota of 2 bln 850.7 mln m^3, 1 bln 973.7 mln m^3 was actually used up;

- Turkmenistan used 96.9 % of its water withdrawal quota; with the quota of 6 bln 500 mln m^3, 6 bln 300.5 mln m^3 was actually used;

[1] Materials on the first item of the agenda of the 59th meeting of ICWC (Ashgabat city, 26 April 2012).

- the Republic of Uzbekistan used 95.8 % of its water withdrawal quota; with the quota of 6 bln 350 mln m^3, 6 bln 083.8 mln m^3 was actually used, including downstream the conventionally mentioned reference gauging station Atamyrat. At the Garagumdarya upper reach, the Republic of Uzbekistan used 97.8 % of the fixed water withdrawal quota; with the quota of 5 bln 980 mln m^3, 5 bln 849.6 mln m^3 was actually used.

The use of the set quotas broken down by river sections was as follows:

1. Upper reach – 68.6 %, in particular: Republic of Tajikistan – 69.2 %, Republic of Uzbekistan – 63.3 %.

2. Middle reach – 95.4 %, in particular: Republic of Uzbekistan – 98.1 %, Turkmenistan – 93.6 %.

3. Lower reach – 101.4 %, in particular: Republic of Uzbekistan – 97.5 %, Turkmenistan – 108.9 %.

During the non-vegetation period, the quota for sanitary and environmental discharges, in general, was used 96.4 %: with the planned quota of 800 mln m^3, the actual one was 771.4 mln m^3.

Turkmenistan used its quota for sanitary and environmental discharges up to a volume of 100.1 %: with the planned quota of 150.0 mln m^3, the actual one came to 150.2 mln m^3. The Republic of Uzbekistan used 95.6 % of its quota; with the planned quota of 650 mln m^3, the actual one came to 621.2 mln m^3.

It should also be mentioned that following the decisions of the adopted Agreement on Water Resources Sharing Between Turkmenistan and Republic of Uzbekistan in the Lower Reaches of the Amudarya River four meetings of the commission for water allocation were held during the reporting period, which were attended by the managers of the Production Association "Dashoguzsuvkhojalyk", Lower-Amudarya BISA (Karakalpakstan and Khorezm), BWO "Amudarya" and Tuyamuyun Hydroscheme Management Organization. At those meetings, they determined the Tuyamuyun Hydroscheme operation modes and agreed upon the quantity of water withdrawal broken down by water users for a certain period.

Water withdrawal quotas and flow regimes in the Amudarya river for the vegetation period 2012.

For the vegetation period of 2012, the river basin countries stated the following water withdrawal quotas to ensure normal water content in the basin:

1. Republic of Tajikistan: 6 bln 882 mln m^3;

2. Turkmenistan: 15 bln 500 mln m^3;

3. Republic of Uzbekistan: 17 bln 220 mln m^3, including the Syrdarya province – 1 bln 200 mln m^3.

To ensure normal water content in the Amudarya river basin, total volume of 39 bln 602 mln m^3 was requested to be set as a quote.

Taking into consideration the above-mentioned conditions, it is planned to supply

10 bln 500 mln m^3 to the Aral Sea and Priaralie during the vegetation period.

According to preliminary estimates, water content for the vegetation period 2012 will be within the range of 110-130 %.

Data on the water withdrawal quotas for the vegetation period 2012 s well as on the Tuyamuyun reservoir operation mode are given in Tables 1.4 and 1.5.

Given the expected increased water content in the Amudarya river basin, the Association undertook the measures aimed at safe routing of flood water.

In conclusion, the BWO "Amudarya" recommends to:

1. Consider the multi-reservoir system operation mode, water withdrawal quotas, volumes of water supply to the Aral Sea for the vegetation period of 2012 presented to ICWC members and make appropriate decision proceeding from the developing water management situation in the basin.

Table 1.1

Analysis of the use of set water withdrawal quotas for the vegetation period 2011-2012 in the Amudarya river basin (as of 01.04.2012), mln m^3

Name	**Quota for 01.04.2012**	**Actual**	**In terms of percentage**
Upper Amudarya Administration:			
(upper reach)	3220.7	2207.9	68.6
Republic of Tajikistan	2850.7	1973.7	69.2
Republic of Uzbekistan	370.0	234.2	63.3
Water withdrawal from the Amudarya river at the mentioned gauging station Atamyrat (Kerki):	12480.0	12150.1	97.4
Turkmenistan	6500.0	6300.5	96.9
Republic of Uzbekistan	5980	5849.6	97.8
Middle Amudarya Administration: *(middle reach)*	8345	7958.6	95.4
Turkmenistan	5100	4775.8	93.6
Republic of Uzbekistan	3245	3182.8	98.1
Amudarya Irrigation Canals Administration:	2419.0	2352.1	97.2
Turkmenistan	715	774.4	108.3

Name	Quota for 01.04.2012	Actual	In terms of percentage
Republic of Uzbekistan	1704	1577.7	92.6
Lower Amudarya Administration:	1716	1839.4	107.2
Turkmenistan	685.0	750.3	109.5
Republic of Uzbekistan	1031.0	1089.1	105.6
Total for the basin:	15700.7	14358.0	91.4
Republic of Tajikistan	2850.7	1973.7	69.2
Turkmenistan	6500.0	6300.5	96.9
Republic of Uzbekistan	6350.0	6083.8	95.8

Table 1.2

Actual operation mode of the Tuyamuyun reservoir
during the period from October 2011 to March 2012

Tuyamuyun reservoir	Unit	Actual					
		Oct	Nov	Dec	Jan	Feb	March
Volume at the beginning of the period	mln m^3	2359	2227	3017	2992	3719	4261
Inflow to the reservoir	m^3/s	327	439	623	583	545	701
	mln m^3	877	1137	1669	1562	1365	1878
Release from the reservoir	m^3/s	377	134	633	312	328	1069
	mln m^3	1009	347	1694	835	823	2863
Volume at the end of the period	mln m^3	2227	3017	2992	3719	4261	3276
Accumulation (+), drawdown (-)	mln m^3	-132	790	-25	727	542	-985

Table 1.3

Quotas for water withdrawal from the Amudarya river and water delivery to the Aral Sea and river delta for the vegetation period of 2012

River basin, country	Water withdrawal quotas, km^3	
	total for the year (from 1.10.2011 to 1.10.2012)	**including for the vegetation period (from 1.04.2012 to 1.10.2012)**
Total withdrawal from the Amudarya river	55.070	39.602
including for the Republic of Tajikistan	9.500	6.882
From the Amudarya river, at the mentioned gauging station	44.000	31.520
Turkmenistan	22.000	15.500
Republic of Uzbekistan	22.000	16.020
In addition:		
Surkhandarya province of the Republic of Uzbekistan	1.570	1.200
Water delivery to Priaralie allowing for irrigation releases and collector & drainage water	11.500	10.500

Note: Water withdrawal quotas suppose water supply for irrigation, industrial and municipal as well as other needs. If water content in the basin changes, the water withdrawal quotas will be adjusted accordingly.

Table 1.4

Predicted operation mode of the Tuyamuyun reservoir during the period from April 2012 to September 2012

Tuyamuyun reservoir	Unit	Predicted					
		Apr	**May**	**June**	**July**	**Aug**	**Sept**
Volume at the beginning of the period	mln m^3	3276	4272	5657	5577	5563	5536
Inflow to the reservoir	m^3/s	1187	2055	2251	3009	2765	1174
	mln m^3	3077	5504	5835	8059	7405	3043
Release from the reservoir	m^3/s	803	1538	2282	3014	2774	1170
	m^3/s	2081	4119	5915	8073	7432	3032
Volume at the end of the period	m^3/s	4272	5657	5577	5563	5536	5547
Accumulation (+), drawdown (-)	m^3/s	996	1385	-80	-14	-27	11

2. Syrdarya river basin

Results of the non-vegetation period 2011-2012 and measures taken to route flood water

According to the forecasts by hydrometeorological services, the water content in the Syrdarya river basin during the non-vegetation period 2011-2012 was expected to be close to the rate. Taking into account the forecast, the mode of the Naryn-Syrdarya multi-reservoir system operation for the non-vegetation period was determined based on long-term average annual values of the inflows to the upstream reservoirs and lateral inflows.

At the end of the non-vegetation period, the actual inflow to the upstream reservoirs came to 5 bln 694 mln m^3 (Table 2.1), or more than the predicted by 100.8 mln m^3.

The Toktogul reservoir received 3.4 bln m^3; Andijan reservoir – about 912 mln m^3; Charvak reservoir – 1.37 bln m^3; this virtually corresponds to the long-term average annual flow rate for the non-vegetation period. The total inflow volume across the basin came to 18.8 bln m^3, including the lateral inflow of 13.1 bln m^3. The total volume of water release from the reservoirs was 37.6 bln m^3 (Table 2.2), or 1.4 times as much as the planned volume.

Such a rise of water release from the reservoirs was required for increasing power generation under the long-lasting cold weather conditions in autumn and winter seasons. Moreover, because of abundant rainfall it became necessary to provide free capacity in the reservoirs to ensure trouble-free and safe regulation of increased flow.
As a result, by April 1, 2012, the upstream reservoirs had 14.5 mln m^3 of water supply in total, in particular: Toktogul reservoir – 13.2 bln m^3; Andijan reservoir – 743 mln m^3; and Charvak reservoir – 496 mln m^3 (Table 2.3). As compared to the last year, by the beginning of the vegetation period there are 3.1 mln m^3 less water in the reservoirs.
Volume of water supply to the water consuming countries as of 01.04.2012 was as follows (Tables 2.4 and 2.5):

Kazakhstan, by the Dustlik canal	158.11 mln m^3 (39 % of its quota);
Kyrgyzstan	30.18 mln m^3 (82 % of its quota);
Tajikistan	14.03 mln m^3 (8 % of its quota);
Uzbekistan	2483.54 mln m^3 (100 % of its quota).

The inflow to the Shardara reservoir during the non-vegetatino period came to 16.0 bln m^3, which was more than the annual inflow volume for the average water year by 4.0 bln m^3. The Aral Sea received 2.58 bln m^3 of water. Besides, 2.19 bln m^3 of water was accumulated in the lakes near the channel of the river lower course (Table 2.6).

The actual operation mode of the Naryn-Syrdarya multi-reservoir system during the non-vegetation period 2011-2012 is shown in Table 2.7.

In general, it should be noted that the non-vegetation period 2011-2012 was different to the ones of the previous years by its long-lasting cold weather. For the period from October through December alone accumulation of snow storage in the Syrdarya river

basin exceeded the rate by 2-3 times. Further precipitation during the period from January through March and starting snow melting might cause sharp rise of water content along with the risk of mud flows and high water in the rivers of the basin as well as inundation and flooding of the areas in the middle and lower reaches of the Syrdarya river.

Given the current stressful water situation, at the 58th meeting of ICWC in Almaty on 17 February 2012 they decided to take necessary measures with the aim to prevent emergency situation and provide joint help to mitigate possible natural disasters. The BWO "Syrdarya" was charged with preparing recommendations on the Shardara reservoir operation mode and water distribution.

The decisions mentioned were implemented in close coordination between water management organizations of the parties.

To reduce inflow to the Shardara reservoir, the Uzbekistan party received and allocated 1505 mln m^3 of water in addition to its needs, diverted 1592 mln m^3 of water to the Arnasay depression, and decreased releases from the Andijan reservoir; this significantly contributed to the relief of that acute situation in the middle and lower reaches of the Syrdarya river.

The past vegetation period has clearly showed the necessity and high significance of committed involvement of and coordination between the Syrdarya river basin riparian countries in the joint management and use of its water resources.

Table 2.1

Parameter	**Volume (from 01.10.2011 to 01.04.2012), mln m^3**		
	predicted	**actual**	**in terms of percentage**
Inflows to the upstream reservoirs:			
Toktogul	3015.0	3408.31	113
Andijan	1000.4	912.64	91
Charvak (sum of four rivers)	1578.0	1373.29	87
Total:	**5593.4**	**5694.24**	**102**
Lateral inflows: (estimated)			
Toktogul – Uchkurgan	400.98	400.98	100
Uchkurgan, Uchtepe – Kayrakkum	4262.2	4545.03	107
Andijan – Uchtepe	2688.2	2874.57	107
Kayrakkum – Shardara	2767.4	3706.48	134
Gazalkent – Chinaz gauging station – Chirchik	901.1	1543.12	171
Total:	**11019.88**	**13070.18**	**119**
GRAND TOTAL:	**16613.28**	**18764.42**	**113**

Table 2.2

Reservoir	Releases (from 01.10.2011 to 01.04.2012), mln m^3		In terms of percentage
	according to schedule	actual	
Toktogul	7054.56	9729.85	138
Andijan	561.43	830.3	148
Charvak (Gazalkent Hydropower Plant)	1689.25	1837.56	109
Kayrakkum	9714.74	14793.75	152
Shardara	7866.72	10394.78	132
TOTAL:	**26886.70**	**37586.24**	**140**

Table 2.3

Reservoir	Water volume in reservoir, mln m^3			
	as of 01.10.2011	according to schedule as of 01.04.2012	actual as of 01.04.2012	actual as of 01.04.2011
Toktogul	19541	15527,34	13219	15398
Andijan	672.2	1099,47	743	1427
Charvak	1182	1047,85	496	747
Kayrakkum	1529	3418,00	3389	3331
Shardara	1118	5383,25	5132	4973
TOTAL:	**24042.2**	**26475,91**	**22979**	**25876**

Table 2.4

Section, water consuming country	Water withdrawal quota, mln m^3	Actual water withdrawal, mln m^3	In terms of percentage
Toktogul – Uchkurgan hydroscheme	***1329.07***	***1107.57***	***83***
Kyrgyzstan	29.76	28.08	94
Tajikistan	47.21	10.81	23
Uzbekistan	1252.10	1068.68	85
Uchkurgan-Kayrakkum hydroscheme	**221.60**	**281.57**	**127**
Kyrgyzstan	7.13	2.1	29
Tajikistan	43.48	0.11	0.23
Uzbekistan	170.99	279.36	163
Kayrakkum hydroscheme – Shardara reservoir	**1556.27**	**1296.73**	**83**
Kazakhstan	406.94	158.12	39
Tajikistan	88.89	3.11	4
Uzbekistan	1060.44	1135.5	107

Table 2.5

Water consuming country	Water withdrawal quota, mln m^3	Actual water withdrawal as of 01.04.2012, mln m^3	In terms of percentage
Kyrgyz Republic	36.89	30.18	82
Republic of Uzbekistan	2483.54	2483.54	100
Republic of Tajikistan	179.59	14.03	8
Republic of Kazakhstan (Dostyk canal)	406.97	158.11	39

Table 2.6

Parameters	Actual, as of 01.04.2012, bln m^3
Delivery to the Aral Sea (Karateren gauging station)	2.58
Delivery to the lake systems of lower reaches	2.19
Discharge to the Arnasay depression	1.59
Inflow to the Shardara reservoir	16.0

Quotas for water withdrawal from the Syrdarya river channel and operation mode of the Naryn-Syrdarya multi-reservoir system during the vegetation period 2012

According to the forecasts of hydrometeorological services updated as of 09.04.2012, during the vegetation period of 2012 the water content in the river basins of the Fergana Valley southern part was expected to be 115–120 % of the rate, and in the river basins of the Fergana Valley northern part as well as Karadarya, Chirchik and Akhangaran river basins 100-110 % of the rate. The inflow to the Toktogul reservoir is predicted to be 120 %; to the Andijan reservoir – over 100 %; and to the Charvak reservoir – 109 % (Table 2.8).

Table 2.7

Naryn-Syrdarya multi-reservoir system operation mode
during the period from 1 October 2011 through 31 March 2012

Toktogul reservoir		**October**	**November**	**December**	**January**	**February**	**March**	**Total**
		actual	**actual**	**actual**	**actual**	**actual**	**actual**	**mln m^3**
Inflow to the reservoir	m^3/s	283.16	252.53	227.10	178.13	172.66	178.23	
	mln m^3	758.42	645.57	608.26	477.10	432.61	477.36	3408.31
Volume:								
beginning of the period	mln m^3	19541.00	19361.00	18555.00	17242.00	15772.00	14392.00	
end of the period	mln m^3	19361.00	18555.00	17242.00	15772.00	14392.00	13219.00	
Release from the reservoir	m^3/s	350.10	557.63	720.45	725.00	723.69	620.52	
	mln m^3	937.70	1445.39	1929.66	1941.84	1813.28	1661.99	9729.86

Kayrakkum reservoir		**October**	**November**	**December**	**January**	**February**	**March**	**Total**
		actual	**actual**	**actual**	**actual**	**actual**	**actual**	**mln m^3**
Inflow to the reservoir	m^3/s	514.03	996.31	1101.36	1007.26	1058.62	962.94	
	mln m^3	1376.77	2582.44	2949.89	2697.84	2652.48	2579.13	14838.54
Volume:								
beginning of the period	mln m^3	1529.00	2045.00	2859.00	3511.00	3496.90	3433.00	
end of the period	mln m^3	2045.00	2859.00	3511.00	3496.00	3433.00	3389.00	
Release from the reservoir	m^3/s	279.51	810.82	1018.60	1169.55	1260.34	1092.00	
	mln m^3	748.65	2101.65	2728.22	3132.52	3157.92	2924.81	14793.76

Shardara reservoir		**October**	**November**	**December**	**January**	**February**	**March**	**Total**
		actual	**actual**	**actual**	**actual**	**actual**	**actual**	**mln m^3**
Inflow to the reservoir	m^3/s	183.33	871.32	1201.92	1239.80	1409.73	1184.65	
	mln m^3	491.04	2258.47	3219.23	3320.67	3532.22	3172.95	15994.58
Volume:								
beginning of the period	mln m^3	1118.00	1363.00	2647.00	3752.00	4135.00	4792.00	
end of the period	mln m^3	1363.00	2647.00	3752.00	4135.00	4792.00	5132.00	
Release from the reservoir	m^3/s	137.10	421.83	807.42	996.93	788.62	793.55	
	mln m^3	367.20	1093.39	2162.60	2670.19	1975.97	2125.44	10394.78
Release to the Kyzylkum canal	m^3/s	5.00	5.00	5.00	41.29	68.28	87.58	
	mln m^3	13.39	12.96	13.39	110.59	171.07	234.57	555.98
Release to the Arnasay depression	m^3/s	0.00	0.00	0.00	138.71	248.28	223.55	
	mln m^3	0.00	0.00	0.00	371.52	622.08	598.75	1592.35
Delivery to the Aral Sea	m^3/s	33.23	97.07	132.92	182.20	301.33	237.83	163.49
	mln m^3	89.00	260.00	356.00	488.00	755.00	637.00	2585.00

Charvak reservoir		**October**	**November**	**December**	**January**	**February**	**March**	**Total**
		actual	**actual**	**actual**	**actual**	**actual**	**actual**	**mln m^3**
Inflow to the reservoir	m^3/s	94.07	96.66	85.77	76.71	72.35	94.95	
	mln m^3	251.97	250.54	229.73	205.46	181.29	254.30	1373.29
Volume:								
beginning of the period	mln m^3	1182.00	1011.00	943.00	797.00	676.00	545.00	
end of the period	mln m^3	1011.00	943.00	797.00	676.00	545.00	496.20	
Release from the reservoir (Gazalkent HPP release)	m^3/s	136.42	118.90	129.81	102.42	106.17	103.03	
	mln m^3	365.39	308.19	347.67	274.32	266.02	275.96	1837.55

Andijan reservoir		**October**	**November**	**December**	**January**	**February**	**March**	**Total**
		actual	**actual**	**actual**	**actual**	**actual**	**actual**	**mln m^3**
Inflow to the reservoir	m^3/s	54.52	97.07	58.45	52.45	36.72	47.03	
	mln m^3	146.01	251.60	156.56	140.49	92.01	125.97	912.64
Volume:								

Andijan reservoir		October	November	December	January	February	March	Total
		actual	actual	actual	actual	actual	actual	mln m^3
beginning of the period	mln m^3	672.20	581.80	777.26	833.00	945.22	843.65	
end of the period	mln m^3	581.80	777.26	833.00	945.22	843.65	743.00	
Release from the reservoir	m^3/s	88.28	20.67	36.66	11.00	75.61	83.33	
	mln m^3	236.45	53.57	98.18	29.46	189.44	223.20	830.30

Table 2.8

Parameter according to hydrometeorological services for the vegetation period of 2012 (from 01.04 to 01.10)	Volume, mln m^3				Percentage of the rate		
	rate	range of predicted values		average	range of predicted values		average
		min	max		min	max	
Inflows to the upstream reservoirs:							
to the Toktogul reservoir	9588	9380	13600	11490	98	142	120
to the Andijan reservoir	3054	2690	3640	3165	88	119	104
to the Charvak reservoir (sum of four rivers)	5777	5530	7120	6325	96	123	109
Total:	**18419**	**17600**	**24360**	**20980**	**96**	**132**	**114**
Lateral inflows:							
Toktogul – Uchkurgan	1184	990	1378	1184	84	116	100
Uchkurgan, Uchtepe – Kayrakkum	3352	3160	3790	3475	94	113	104
Andijan – Uchtepe	2576	2370	3000	2685	92	116	104
Kayrakkum – Shardara	3162	3000	3950	3475	95	125	110
Gazalkent – Chinaz gauging station – Chirchik	923	632	1265	949	68	137	103
Total:	**11197**	**10152**	**13383**	**11768**	**91**	**120**	**105**
GRAND TOTAL:	**29616**	**27752**	**37743**	**32748**	**94**	**127**	**111**

In the large, the water content in the Syrdarya river basin is expected to be 100 % of the rate, or 32.75 bln m^3.

Total available water resources for the vegetation period of 2012, including the water reserve in the reservoirs without taking into account dead water, come to 48.1 bln m^3 (Table 2.9). As compared to 2011, the volume of available water resources is predicted to be more by 4.3 bln m^3.

Table 2.9

Years	2008	2009	2010	2011	2012
Total inflows	**19868**	**30091**	**43705**	**25493**	32748 (predicted)
% of the rate (29577 bln m^3)	67 %	102 %	148 %	86 %	111 %
in particular:					
to the upstream reservoirs	12763	19978	29071	16983	20980
lateral inflows	7105	10113	14634	8510	11768
Water supply in the reservoirs without taking into account the dead water	**8884**	**9026**	**12729**	**18363**	**15466**
in particular:					
Toktogul	1063	921	4198	9898	7719
Andijan	540	541	1088	1277	593
Charvak	51	418	374	321	70
Kayrakkum	2561	2281	2457	2414	2472
Shardara	4669	4865	4612	4453	4612
Total available water resources	**28752**	**39117**	**56434**	**43856**	**48214**

According to calculations, when the Kyrgyz Republic releases water of up to 3.6 km^3 period to meet its own needs for electric power during the vegetation period, the Toktogul reservoir will accumulate water volume of 19.5 bln m^3 by the beginning of the 1st ten-day period of August. Therefore, to cover the needs of the basin during the vegetation period and prevent forced releases of up to 1.6 bln m^3 of water to interested parties, it is necessary, proceeding from a water situation, to consider the issue related to the reception of electric power and increase of the volume of releases from the Toktogul reservoir in advance.

Taking into account the actual data for the first ten-day period of April, forecasts by hydrometeorological services, and requests of water users (Table 2.10) for the forthcoming vegetation period, the operation mode of the Naryn-Syrdarya multi-reservoirs system (Table 2.11) is calculated and submitted to ICWC members for consideration.

Table 2.10

Water withdrawal quotas for the Syrdarya river basin countries
for the vegetation period 2012

Components	Quotas, mln m^3
TOTAL from the Syrdarya river	18 605
Republic of Kazakhstan, including the Dustlik canal	7 700 780
Kyrgyz Republic	200
Republic of Tajikistan	1 905
Republic of Uzbekistan	8 800
in addition: Aral Sea and Priaralie	2 800

Table 2.11

FORECAST SCHEDULE
of the Naryn-Syrdarya multi-reservoirs system
for the period from 1 April 2012 to 30 September 2012

Toktogul reservoir		**April**	**May**	**June**	**July**	**August**	**September**	**Total, mln m^3**
Inflow to the reservoir	m^3/s	390.33	743.00	1138.40	1018.60	719.00	371.50	
	mln m^3	1011.74	1990.05	2950.73	2728.22	1925.77	962.93	11569.44
Volume:								
beginning of the period	mln m^3	13219.00	13632.22	15029.54	17329.01	19242.78	19500.00	
end of the period	mln m^3	13632.22	15029.54	17329.01	19242.78	19500.00	19500.00	
Release from the reservoir	m^3/s	230.77	220.00	250.00	300.00	616.94	364.60	
	mln m^3	598.15	589.25	648.00	803.52	1652.42	945.04	5236.38

Kayrakkum reservoir		**April**	**May**	**June**	**July**	**August**	**September**	**Total, mln m^3**
Inflow to the reservoir	m^3/s	516.45	435.96	327.10	209.22	584.42	490.86	
	mln m^3	1338.63	1167.67	847.85	560.35	1565.30	1272.31	6752.12
Volume:								
beginning of the period	mln m^3	3389.00	3418.00	3418.00	2825.24	1544.66	1366.06	
end of the period	mln m^3	3418.00	3418.00	2825.24	1544.66	1336.06	1760.55	
Release from the reservoir	m^3/s	523.15	407.21	500.00	600.00	600.00	300.00	
	mln m^3	1356.01	1091.22	1296.00	1607.04	1607.04	777.60	7734.91

Shardara reservoir		**April**	**May**	**June**	**July**	**August**	**September**	**Total, mln m^3**
Inflow to the reservoir	m^3/s	634.13	419.17	414.36	308.55	369.19	428.38	
	mln m^3	1643.66	1122.71	1074.02	826.41	988.84	1110.37	6766.01
Volume:		5132.00	5120.90	4274.98	3371.30	2135.34	1343.05	
beginning of the period	mln m^3	5120.90	4274.98	3371.30	2135.34	1343.05	1566.95	
end of the period	mln m^3	609.33	600.00	600.00	600.00	550.00	300.00	
Release from the reservoir	m^3/s	1579.39	1607.04	1555.20	1607.04	1473.12	777.60	8599.39
	mln m^3	10.00	100.00	110.00	110.00	90.00	25.00	
Release to the Kyzylkum canal	m^3/s	25.92	267.84	285.12	294.62	241.06	64.80	1179.36
	mln m^3	22.38	0.00	0.00	0.00	0.00	0.00	
Release to the Arnasay depression	m^3/s	59.18	0.00	0.00	0.00	0.00	0.00	59.18
	mln m^3	181.30	183.94	182.77	183.10	185.29	181.77	
Delivery to the Aral Sea	m^3/s	469.92	492.66	473.73	490.42	496.29	471.14	2894.16
	mln m^3							

Charvak reservoir		**April**	**May**	**June**	**July**	**August**	**September**	**Total, mln m^3**
Inflow to the reservoir	m^3/s	371.73	554.52	659.67	488.06	274.00	162.33	
	mln m^3	963.53	1485.22	1709.86	1307.23	733.88	420.77	6620.49
Volume:								
beginning of the period	mln m^3	496.20	989.38	1704.63	2001.37	1976.92	1762.49	
end of the period	mln m^3	989.38	1704.63	2001.37	1976.92	1762.49	1626.93	
Release from the reservoir (Gazalkent HPP release)	m^3/s	194.20	286.77	543.33	494.19	352.26	213.33	
	mln m^3	503.37	768.10	1408.32	1323.65	943.49	552.96	5499.88

Andijan reservoir		**April**	**May**	**June**	**July**	**August**	**September**	**Total, mln m^3**
Inflow to the reservoir	m^3/s	177.33	318.50	343.30	215.50	103.60	74.60	
	mln m^3	459.65	853.07	889.83	577.20	277.48	193.36	3250.59
Volume:		743.00	895.09	1345.44	1715.94	1553.84	1212.56	
beginning of the period	mln m^3	895.00	1345.44	1715.94	1553.84	1212.56	1221.84	

Andijan reservoir		April	May	June	July	August	September	Total, mln m^3
end of the period	mln m^3	117.91	150.00	200.00	275.00	230.00	70.00	
Release from the reservoir	m^3/s	305.63	401.76	518.40	736.56	616.03	181.44	2759.82
	mln m^3							

MEETING OF THE WORLD WATER COUNCIL BOARD OF GOVERNORS

A regular meeting of the WWC Board of Governors was held in Doha (Qatar) thanks to the hospitality of the National Food Security Program of Qatar headed by Fahad Al-Attiya, Chairman of the Qatar National Food Security Programme (QNFS).

In his speech and report, he noted that Qatar is a small country located on the Arabian peninsula, the population of which was 1.7 mln people with a total area of irrigated lands of 65 thousand hectare. Its goal was providing itself with food, while currently the most part of the food was imported. All the water supplied for irrigation is to undergo desalination: 3.8 mln m^3 per day or 100 mln m^3 per year.

To feed the nation, it is necessary, first, to train those who will deal with this issue. Dozens of colleges, universities, and training centers have been established in the country with the assistance of major American universities. The Carnegie University, Georgetown University, Texas University, Cornell University, etc. which are financed by oil and gas producing companies, viz. Shell, Exxon Mobile, Total, General Electric, etc., took part in that activity. Owing to their efforts and support, the half-a-billion-cost Science & Technology Park of Qatar has been set up. Now it is a center of constantly progressing interaction between the industry and academic science.

Lack of usable water sources does not scare Qataris. Water is a by-product obtained in the oil and gas production process. Every barrel of oil is accompanied by three-four barrels of water which must be removed but can be used. Wide use of this water for animal husbandry and irrigation has become the first postulate of resolving the food problem. Second, use of solar energy both in greenhouses as well as generally for the production of clean electric energy. Solar energy is generated on large “solar fields” covering hectares of area. Demineralization of oil and gas waters is the matter of the Center’s activity towards reducing the cost of desalination and environmental safety. The desalination cost does not exceed half a dollar per cubic meter. The Program also embraces the production of liquid soluble fertilizers, large-scale construction of greenhouses, as well as complete food processing so that to fully stop importing food which currently accounts for up to 90 % of all products. The Program focuses on local diet as well. One of the Program elements deals with financial viability. This includes subsidizing agricultural production, including irrigation. Each of the 1340 farmers regularly accounts to the government for the implementation of cropping technology and their financial status with openness, transparency, and trust principles. Each farmer is provided with financial aid proceeding from two conditions: prevention of

rise in food prices over and above the established limits; and ensuring of required level of reproduction for a long-term period allowing for capital formation.

Scientific management of the Program is performed by the Texas University (Prof. Patric Linke) in association with the Science & Technology Park of Qatar.

Qatar together with a number of other countries initiated the establishment of the Global Dry Lands Alliance which included several countries, including Kazakhstan, one of the former CIS republics.

The Board members were able to familiarize themselves with the activity of the Park and its structure.

What stands out is that all oil processing and oil & gas processing companies contribute tens of millions of US dollars for the maintenance of the Park on an annual basis!

The Board heard the report by L. Fauchon about the activities towards strengthening hydro-diplomacy and discussed the outputs of the 6th World Water Forum. The International Committee of the Forum read out the summary of all the results and was making ready for the transfer of all the heritage of the Forum to WWC, including:

- High society of the 6th World Water Forum;
- Message of RIO + 20 concerning water resources;
- Extended Istanbul Water Consensus;
- "Village of Solutions";
- Global Water Platform (209 pages).

The Board will submit three essential propositions to the World Water Community for review:

1. One of the conclusions of the local and regional discussions was to address requests to local governments concerning the introduction of a financial support mechanism in the form of Water Solidarity Fund to the amount of 1% of GNP.

2. World Energy Union and WWC shall establish a working group for monitoring of the needs for water and energy taking into consideration demographic problems and climatic changes.

3. Implementation of water right must become a nationwide campaign that will bring about the revision of national laws and undertaking of measures aimed at upgrading those to improve everyday living conditions of people.

The Board discussed the Message to countries regarding the organization of a tender for the selection of the venue for the 8th World Water Forum to be held in 2018.

Expression of interest along with the presentation of the information about successful organization of the Forum should be submitted to the WWC Headquarters in Marseille before 1 November 2012. In connection with the conduction of the WWC General Assembly in Marseille on 18-19 November 2012, the Board has adjusted the schedule of the preparatory works on the development of a three-year Strategy of WWC, the

first version of which is to be presented on the 17th of September for comments, and the final version on the 5th of October.

When discussing that issue, Prof. V.A. Dukhovny highlighted the necessity to prepare a report on the implementation of the current strategy for the years 2009-2012.

The Board also heard and considered the financial and management reports of WWC. When approving the financial report, an opinion was expressed about the necessity of more transparent process of approving the report on utilized funds received as a contribution from Water Forums for ensuring more efficient use of these funds for wider involvement of participants and Council members in the improvement of its performance and working groups' activities aiming to implement the Strategy.

They proposed (but not adopted) the updated version of the WWC Charter as it pertains to the involvement of young (18-35 years old) representatives in the Board. It was proposed to thoroughly study this issue and report at the next meeting.

Madam E. Park and the representative of the Ministry of Land, Transport, and Maritime Affairs of South Korea, Mr. Ji-Hyun Lim delivered a report on the measures aimed at expanding the activities related to the preparation for the 7th World Water Forum.

On behalf of IWRA (International Water Resources Association) Prof. Dukhovny informed IWRA representatives of the cooperation with WWC in the development of an integrated program for the improvement of water resources management subdividing it into water supply management (WSM) and water demand management (WDM).

The WWC Secretariat distributed the note with several recommendations to improve the WWC Board performance based on the analysis of the last nine years prepared by Prof. Dukhovny and his Alternate Dr. Ziganshina. The note won approval of the majority of the Board members, including President and Vice President.

V.A. Dukhovny

CONSULTATIVE WORKSHOP ON ADB RETA 6486 "IMPROVEMENT OF WATER RESOURCES MANAGEMENT IN CENTRAL ASIA" AND ASIAN IRRIGATION FORUM

10-13 April 2012, Manila, Philippines

The Consultative Workshop on the Regional Technical Assistance 6486 "Improvement of Water Resources Management in Central Asia" (ADB RETA 6486) was held at the Headquarters of the Asian Development Bank (ADB) in Manila on 10 April 2012. The Workshop was chaired by Mr. Makoto Ojiro, Director of Environment, Natural Resources and Agriculture Division at the ADB Central and Western Asia Department, and attended by delegations from Kazakhstan, Kyrgyzstan,

Tajikistan, and Uzbekistan, as well as representatives of regional organizations (IFAS Executive Committee, SIC ICWC, BWO "Amudarya", and BWO "Syrdarya").

The first part of the Workshop was devoted to the presentation of the outputs of ADB RETA 6486 implementation breaking down by the components "Support to the Chu-Talas Joint River Commission" (Kazakhstan and Kyrgyzstan) and "Flood Control in the Panj River Basin" (Afghanistan and Tajikistan). Also, Mr. Rutaro Takaku informed the participants of launching the new Regional Technical Assistance Project ADB RETA 8015 for working out of water sector development strategies in three Central Asian countries: Kyrgyzstan, Tajikistan, and Uzbekistan. It is expected that the strategies developed within this RETA will serve as the basis for the investment to the water sectors of the countries by ADB.

In the second part of the Workshop, they discussed the measures to be implemented before ADB RETA 6486 completion in December 2012. During the discussions, various projects were presented to ADB for consideration, such as: development of a methodology for information exchange under the Information Exchange Agreement signed between Afghanistan and Tajikistan in 2010; development of information and analytical tools for the purpose of improving the BWO "Amudarya" performance, and further support to the Chu-Talas Commission's activities. In the course of the discussion, they also spoke of the possibility to resume the works aimed at bringing to signing of the draft agreement on information bases, which was prepared within ADB RETA 6163 and sent to the countries for discussion at the national level. Finally, Mr. Colin Steely, ADB Consultant, presented the Australia visit agenda for the officials of the Central Asian Republics and Afghanistan with the view of getting them familiar with the Australia's experience in water resources management.

The Asian Irrigation Forum attended by representatives of the Central Asian countries and regional organizations was held in Manila on 11-13 April 2012. ADB organized the First Asian Irrigation Forum for the purpose of considering the ways of solving the existing problems in the irrigation sector and identifying possible areas for investment. For the three days, the forum participants were keeping the track of the sector development history and discussed the future of irrigated agriculture in the region. Speakers noted that irrigated agriculture is an integral attribute of food security which should be considered as a common social task and not only as a problem of farmers (Dr. Prabhu Pingali, Gates Foundation, and Mr. Ian Makin, ADB). In general, food security in Asia has been improved due to intensification and rise in performance of small farms, as well as application of new technologies (Pingali). According to data for 2005, the grain production had increased three times, rice prices dropped by 40%, and the production of fruits and vegetables increased significantly (Thierry Facon, FAO). Among the main problems were the following:

- diversification of growing crops (because of the change in diet and reduced rice consumption) and associated challenges for the operation of existing irrigation systems and designing new ones. For example, David Dow mentioned that over the last 40 years there had been a sharp decline (50%) in rice consumption among the rich people in Indonesia cities; a similar trend was in the agricultural sector. Among the main causes of that decline are globalization and urbanization processes;

- need for adaptation to the effects of climate change, for example cultivation of drought-resistant crops and preparation of irrigation systems;
- decline of young generation's interest in working for the irrigation sector and for farming (Rudinas);
- inadequate attention to groundwater usage in irrigated agriculture (Professor Randy);
- the works towards transferring water resources management to water users themselves (so-called Participatory Irrigation Management by Farmers, or PIM) often focus only on the establishment of formal organizations (such as Water Users' Associations) without due regard to enhancement of their performance in order to improve water resources management (Dr. Bryan Bruns). As such, Mr. Gao, President of the International Commission on Irrigation and Drainage, made a note that the authority transfer to water users must not be reduced to shifting government responsibilities onto farmers' shoulders;
- insufficient information and consulting assistance to farmers. Chris Perry called upon for providing farmers with a wide range of information which should be based on reliable estimates and researches. Dr. Wim Bastiaanssen (Netherlands) highlighted the invaluable role that the private sector can play in that process;
- intensification and rise of land and water productivity.

The participants also discussed possible ways to solve the above-mentioned problems and recommended ADB to provide the following assistance:

- investing in the building of capacities of both irrigation sector workers and farmers; ensuring efficient system of providing farmers with required information. The project implemented in Tajikistan was mentioned as a good example (Hans Woldring);
- enhancing the effectiveness of the projects carried out in the irrigation and drainage areas. Mr. Makin (ADB) noted that when it comes to the issue of whether to invest to irrigation & drainage or to transport infrastructure, the transportation related projects were seeming more interesting because of their high payback;
- involving the private sector to the irrigation & drainage area; providing consulting assistance to farmers is one of possible ways.
- more clearly defining farmers' rights for water, which allows enhancing their responsibility for rising land and water productivity;
- considering the irrigation & drainage management issues in an integrated manner as well as at different levels (Mark W. Rosegrant, IFPRI);
- modernizing outdated irrigation systems to ensure their adaptation to new conditions (Thierry Facon);
- broader introduction of new tools, technologies, and innovations for improving better management in irrigated agriculture (e.g. drip irrigation and fertilizer application technologies) (P.Solman and Ethan Markowitz); laser land levelling

(John Whitehead, Hans Woldring, Owen Williams).

New information technologies (Turning Point) which allow getting audience's response to the issues being considered were used at the Forum.

D.R. Ziganshina

SUMMER CAMP FOR CENTRAL ASIAN STUDENTS IN THE CENTER FOR INTERNATIONAL DEVELOPMENT AND ENVIRONMENTAL RESEARCH AT THE UNIVERSITY OF GIESSEN IN GERMANY

From 6 to 11 May 2012, a summer camp was organized at University Giessen for students from Central Asia studying the following two programs: 1) LUKA Program: land use, ecosystem service, and human well-being in Central Asia; 2) CLINCA Program: climate change on in Central Asia.

The Programs are financed as follows: the former by Volkswagen and the latter by DAAD. In these programs, a total of 20 students are studying for master degree and PhD degree, including 11 persons from Uzbekistan, eight of whom are from SIC ICWC. Study in the both programs is carried out with the involvement of two advisers, one is a German and another is from a respective Central Asian country.

The study under the LUKA Program provides for the so-called "sandwich" system, under which 40 % of their time students spend in Germany, learning methodological and theoretical approaches of German specialists, while 60 % of their time they spend in the field as well as for collecting materials and carrying out field experiments.

In the CLINCA Program, this ratio is somewhat different. In this case the study goes mainly in Germany with short-term trips to research sites.

This examinations cycle is third in the current study period which is to end in late 2012. At the beginning of the examinations cycle, the Program Directors (Prof. Schmidt in economic researches and Prof. Frede in land reclamation and ecology area) briefly summarized the outcomes of the study program activities and gave the floor to students for open debates about the execution and further development of educational research works. The principal points in the course of the debates consist in that the participation of German professors ensures high level of motivation of students to master new research methods, including methods of laboratory and field researches as well as application of software. Combination of European approaches and the Central Asian practice along with deep understanding of the real situation in the region by students and their Central Asian supervisors allows significantly enhancing the effectiveness of educational and research works and obtaining a desired result.

All the speakers noted the good atmosphere that took shape in the groups and sufficiently great enthusiasm of the students in completing their research works within

the terms established. At the same time, suggestions were made that the joint actions of two supervisors and their student should start before specifying a research issue in order to ensure that the possibility of information acquisition, methodology, and theoretical and analytical framework of a prospective research should be approved as early as in the first stage.

Taking into consideration the specific nature of the students studying in the German environment, it would be reasonable that the students studying for a Master's degree should continue for obtaining also PhD degree. Most speakers highlighted the necessity to set more feasible topics of prospective researches from the very beginning.

The whole day was devoted to the reports presented by young scientists. The report "Land use and food security" made by Mr. Boris Gozhenko, student from Uzbekistan, demonstrated how to satisfy the food demands of the growing population of the Central Asian countries through increasing the food balance, the dynamic growth by enhancing land and water productivity, etc. The report of the Kyrgyzstan student Ms. T. Tchibaeva stated the results of the investigation of the last earthquake on the Pamir-Alai range, in the Nura area; it was mentioned that the earthquake source is located near the construction site of the Rogun Hydropower Plant. Mr. I. Aslanov was carrying out an assessment of the salt and dust transfer in the Uzbekistan part of Priaralie (Sub-Aral Sea region); he showed the results of the analysis of the salt and dust transfer sources on the Aral Sea bottom. Mr. M. Dushanakunov from Kyrgyzstan presented a very interesting report "Water resources of Central Asia mountain areas: contribution to the water balance of the fertile area". The voluminous observation material collected by him had corroborated the proposition stated by other earlier researchers (in particular G. Glazyrin, Hadi Oberhansley) that there was no exactly a universal catastrophic melting of glaciers and decrease of their volumes. Glaciers increase their volumes in particular years and decrease in other. This phenomenon is known among hydrologists as the "breathing glaciers" concept.

Mr. G. Umurzakov, SIC ICWC specialist, presented a very interesting report named "Estimation of phreatic evaporation in irrigated lands with using isotopes". The content of the Mr. Sh. Kenjebayev's report "Ecohydrology in changing environment" was similar to the previous one. The both of the reports were dealing with almost the same issue, i.e. interaction of shallow groundwater, deep groundwater, and surface water. The data obtained by Mr. Sh. Kenjebayev based on the theoretical studies carried out by using domestic methods and, at the same time, field observations in the Fergana Valley were compared with the results of the assessment of the same parameters acquired by G. Umurzakov through isotope methods. The interesting point is not only that the both authors drew fairly well matching indicators, but also that application of new methodological approaches of German scientists allows confirming the relevance of the theoretical approaches made 50 and 30 years ago. Several reports were about the research results obtained by means of satellite methods in Kazakhstan; as well a number of economic reports based on materials of Uzbekistan, Tajikistan and Kazakhstan were delivered.

A representative of the "Volkswagen" Concern, donor organization, Mr. Nolenburk took part in the discussion of the study and research results. He expressed great

satisfaction with the results of the researches and assured the participants that the project was obviously going to be continued by the decision of the "Volkswagen" Company management. At the same time he took a favorable view of our proposal on financing the works related to the monitoring of the Aral Sea bed and Amudarya river delta, which were previously carried out by the German Agency for Scientific and Technical Cooperation (GIZ), and suggested submitting proposals for a new tender which would be announced in November.

The summer school participants had an opportunity to become familiar with an environmental protection practice by way of example of the biosphere reservation RON founded in 1991 as one of 12 reservations in Germany. Of 180 ths ha territory, several zones were noticed, where a very accurate work for conservation and monitoring of environmental sustainability of the region was being carried out. The biosphere reservation RON is located at an elevation from 250 to 950 m above sea level and covers an area of 185 ths ha in Bavaria, Thuringia and Giessen. About 162 thousand people live in the zone; their settlements are located mainly on the zone periphery. In the reserve area, there are a transition zone, buffer protection zone, and central reservation zone. In all other zones, there is production which affects the natural complex to a different extent. The morphological types are represented by high bogs, 32% are covered by meadows and pastures, 18% are under agricultural crops, and 30% are occupied by forests. The work that is being executed by scientists together with a large number of volunteers aimed at protecting the region from environmental disturbance and enhancing the biological productivity and biodiversity is impressive.

V.A. Dukhovny

THE FIFTH INTERNATIONAL CONFERENCE BALWOIS: WATER, CLIMATE, AND ENVIRONMENT

28 May – 2 June 2012, Ohrid, Macedonia

The Conference was organized by joint efforts of the Balkan Water and Hydrometeorological Organization Development Network and Ministry of Environment of the Republic of Macedonia with the participation of the Ss. Cyril and Methodius University, Macedonia Institute of Hydrometeorology, UNDP, and International Association of Water Resources (IAWR). The Network was established within the European Union DG Research Project and continues its activity through regular virtual exchange inside the Network. This process is successfully managed by a small coordination group headed by a former project coordinator Prof. Marc Morel (France).

After welcoming speeches and opening statements the Conference got down to work around six round tables. A great number of reports were delivered at the sections "Climate and hydrology", "Water, environment, and human activity", "Ecohydrology

and hydrobiology". Three more sections presented reports on the subjects "IWRM", "Water risks", and "Computerization and technologies".

In general, it was attended by representatives of more than 20 countries, especially the numerous were the delegations from Balkan countries (Serbia, Bulgaria, Albania, Slovenia, Croatia, Turkey, Greece) as well as Russia, India, China, Mexico, USA, Germany, Brasil, and many others. Interesting reports were presented by researchers from the Water Problems Institute of the Russian Academy of Sciences about predicting the flow of northern and Siberian rivers as well as modeling the system of reservoirs on the Volga river. Many reports of Bulgarian and Turkish colleagues were dealing with the burning issue of specification of water consumption in whole, especially for irrigation, development of remote investigation methods. While the science of Central Asian countries in other issues is at appropriate level, our considerable lag in the application of satellite investigation methods is obvious even as compared to Turkey.

Prof. V.A. Dukhovny on behalf of IWRA together with the Director General of IWRA took part in drawing up of a document for cooperation between IWRA, Balwois, and Government of Macedonia in further development of researches on water problems and hydroecology, as well as on behalf of SIC ICWC reported the works on IWRM implementation in Central Asia.

V.A. Dukhovny

LAND USE MAPPING AND METHODS OF THE ASSESSMENT OF LAND RESOURCE DEGRADATION

At the initiative of FAO, the regional training "Land Use Mapping and Methods of the Assessment of Land Resource Degradation" was held in Izmir (Turkey) on 4-15 June. The training aimed at introduction of the FAO experience in the assessment of land degradation (according to the United Nations Convention to Combat Desertification) and assessment tools.

The training was attended by representatives of FAO (Iness Bernaerts, Riccardo Biankalani), Azerbaijan, Kyrgyzstan, Tajikistan, Turkey, and Uzbekistan.

The regional training was conducted according to the following program:

1. Presentations by participating countries.

- The land degradation processes in Kyrgyzstan are the result of both anthropogenic and natural factors as well as combination of those. *The major land degradation processes* being faced with in Kyrgyzstan include soil erosion, land salinization, waterlogging, chemical contamination, and dying-off of plants. Degradation of natural resources is caused by geophysical and climatic characteristics of each zone, being aggravated due to excessive and improper exploitation of fragile natural base. Intensity

of erosion is caused mainly by surface washout, silting of irrigation systems, and farming works on sloping lands damaging the lands. *Highland regions, especially in southern areas (Tien Shan and Pamirs-Alai) are more vulnerable and less tolerant with respect to excessive man's impacts in comparison with flat areas.* At present in Kyrgyzstan land degradation is a serious and widespread problem with 88 % of all agricultural lands being classified as degradable and affected by desertification processes; 60 % of arable lands are subject to water erosion (ablation) and wind erosion (aeolation). *Pasture lands:* 30 % are under evident desertification; 27 % are under moderate conditions; and 17 % are in the early stages of desertification.

- Information on the pasture lands and animal husbandry in Tajikistan. The area of grasslands is 3.9 mln ha. Due to their altitudinal zonal sequence (climatic and soil) they are divided into seasonal as follows: summer pastures (Alpine and Subalpine meadows); winter ones – on bottomlands; spring and autumn ones – intermediate in medium-altitude areas. It is only in recent times that the free-range animal husbandry has been restored. Nowadays, livestock is concentrated in the hands of the population. The quantity of grazing livestock is much above the carrying capacity of the pastures. The pastures are allocated to communities (djamoats); cattle are mainly grazing around human settlements, on pastures around villages (within a range of 2-3 km). Particularly after the political and economic crisis of the 1990s cattle were not turned out to remote summer pastures (these are less degraded). Information about degradation is incomplete because of lack of financial support for the execution of researches.

Assessment of degradation at the national level in China (the FAO LADA project was launched in 2002 and went on until 2010). The main outputs are: mapping of the land use system; creation of national database; assessment of forest vegetation (silva); land degradation assessment (field studies and remotely-sensed data). The assessment was made based on long-term observations. The following data are used to assess land degradation: slopes; erosion; natural cover of ground (pasture assessment); assessment of the degradation of cultivated areas; expert judgement. The following were determined in the course of the investigations carried out: volume, type, and rate of degradation; pressure on environment. Land degradation rate is defined based on long-term observations (at the national level, state of land resources is assessed every three years) with the participation of land use specialists, soil scientists, livestock breeding specialists, desertification specialists, economists, GIS specialists, and local experts. There are 26 types of land use in China. LADA assessment in China was carried out at three levels: global, national, and local. The local-level assessment was made for supporting the national-level assessment, since there are differences between the measures undertaken to reduce degradation at the national and local level. The basic components of the local assessment within LADA are the assessment of soil and vegetation cover. When carrying out field researches, discussions with local people will be required. Six pilot districts were selected in China and existing conditions were assessed in detail as well as their impact on the quality of the local population's life. The pilot assessment used the approach "determination of hot spots and light spots" (hot spots stand for the territories with extensive land use; light spots stand for the territories with intensive land use). Investments were attracted for each pilot site and appropriate recommendations for decision makers. For example, there is a government

program for supporting farms with the aim to protect pastures against overgrazing. The government constructs stock keeping boxes; construction of one such a structure costs from thousand to one and a half thousand dollars. In China, monitoring of the processes of desertification and degradation of lands, including arid areas, is performed on a regular basis as well as monitoring of forest health and monitoring in terms of land use.

- The area of Uzbekistan is 447,800 km^2. It is land degradation that is the major challenge threatening environment and social & economic development. The major factors of land degradation are: soil salinization; deficit of water resources; water and wind erosion; loss of organic and mineral substances in soil; change of plant cover; overgrazing; loss of biodiversity. About 53 % of the rural population of Uzbekistan lives on highly saline lands. Over 50 % of irrigated lands suffer from repeated salinization. Fertility of the lands (pilot sites on the areas surveyed) has declined by almost three times. During the low-water period of 2000-2001, loss of cereals came to 14-17 %, for other crops averaged 45 to 52 % (in the lower reach of the Amudarya river up to 75 %). Integration to the global FAO Land Use System has been made within the CACILM program. Through the compilation of the national ecosystems of the base of biophysical resources (global system GLCN, 2000) the Uzbekistan Institute of Hydrology and Land Reclamation has identified 25 classes; the following thematic maps were used as data sources: pasture map; map of prevailing crops; soil map (according to FAO classification), temperature regimes map; vegetative regime duration map; attributive layer – intensity of grazing cattle on pastures. Environment degradation processes can be seen most clearly in the case of the ecological crisis on the Aral Sea and Sub-Aral Sea region (Priaralie). SIC ICWC carried out a series of researches of the ecological crisis caused by drying-out (drop of water level) of the Aral Sea. Among the major impacts of the Aral Sea shrinkage (in addition to reduction in the Aral Sea volume and surface area, increase in and change of its salinity nature) it is safe to mention also the emergence of vast saline desert territory the area of which now comes to nearly 5 mln ha. As a result, a unique freshwater water body has given place to a huge highly-saline lake in combination with a vast saline desert at the joint of three sandy deserts. Since 2005 SIC ICWC has accomplished nine field expeditions, investigated in detail 800 pilot sites, established 300 soil profiles, and conducted a detailed investigation of soils. The soil of an emerging desert with a salinity of 5-20 kg/m^3 and weakly fixed by vegetation undergoes intensive deflation. The salts contained in it are carried out to surroundings. The Aral Sea bottom being dried out is an example of arid salt accumulation under which different characteristics of alkali soils and saline soils (Stulina, Sektimenko 2004). Erosion-prone areas, areas of possible negative impact as well as the areas to be protected are highlighted.

2. Introduction to the LUS system. The land use system includes land cover (reference map), types and ways of land use, etc.

3. LADA system: Assessment of land resources degradation in arid regions. The LADA project objective is to develop assessment means and methods and quantitative measurement of nature, degree of extension, intensity and effect of land degradation in arid ecosystems, watersheds and river basins, places of carbon-dioxide gas concentration and biological diversity on a series of spatial and time scales. The

project is directed towards the creation of national, regional, and international capacity for the analysis, design, planning, and execution of measures aimed at the mitigation of the consequences of land resources degradation and ensuring balanced use and practice of management of land resources.

The LADA system is initiated by UNCCD. The basic results are as follows:

- Land degradation assessment instruments and methods (according to a FAO report, to date one fourth of world land resources is subject to degradation; degraded lands and mainly located on arid and semiarid areas).
- Key subsystems for the assessment of degradation have been identified.
- Change in the soil cover has been assessed (in 26 countries).

In the context of LADA, the guiding principle of the approach to the assessment of land degradation consists in that land use is the main factor of land degradation.

4. Introduction to the land resources degradation assessment at the national level. To assess the land resources degradation assessment at the national level, the following is to be specified:

- degradation of vegetation cover;
- degradation of soil cover (soils are assessed according to FAO classification);
- shortage of water and land resources;
- livestock density;
- irrigated areas are divided into large-scale, medium-scale, and small-scale ones;
- special emphasis is placed on protected zones.

Then various statistic analyses and maps are created. An administrative unit where an investigation at the national level is to be carried out is identified within the country by an expert group proceeding from the quality, quantity, and accessibility of initial statistic and cartographic information. Each country sets its rules for the assessment of degradation taking into account the existing conditions and forms of land use. Further, degradation of cultivated areas and pasture lands is assessed. Moreover, when carrying out an investigation, it is necessary to cover all types of land use. The national database should include the following information:

- prior assessments (databases, maps, cadastres, etc.); if there is no information for the country as a whole, the available part is used;
- actual and everyday knowledge of local experts;
- expert data.

5. Practical training .

6. Visit to the site of practical works: field studies; exploration of different areas of Izmir and Bergama.

- Water charge in Turkey comes to 200 US dollars per hectare; all hydraulic works are government owned.

7. Getting familiar with the Lada_QM database (QM questionnaire for mapping).

QM questionnaire for mapping is made by using:

- reference maps of degradation assessment (are made in the course of system development), including prior assessments (databases, maps, cadastres);
- list of measures to be taken to address degradation (uses national and local sources of information, actual and everyday knowledge of experts).
- the QM questionnaire on mapping is based on the DPSIR method which determines the factors of pressure, location, effect, and response.
- degradation assessment is carried out through expertise.

E.M. Roschenko

7TH ASIAN REGIONAL CONFERENCE AND IRRIGATION AUSTRALIA CONFERENCE 2012

24-29 June 2012

On a commission from Chairman of NCID Dr. Sh.R. Khamraev and Honorary Vice-President of ICID Prof. V.A. Dukhovny and on their behalf, the Leader of the "Water Productivity Initiative at Plot Level" Project (WPI-PL) Dr. Sh.Sh. Mukhamedjanov took part in the 63rd meeting of the ICID International Executive Council and 7th Asian Regional Conference and Australia Irrigation Conference 2012 which were held in Adelaide, Australia, on 24-29 June 2012.

On behalf of Prof. Dukhovny, he chaired the meeting of the Working Group (WG) "Irrigation and drainage in countries with economies in transition".

At the meting they emphasized the necessity to involve countries like Azerbaijan, Bulgaria, China, Kazakhstan, Hungary, Romania, Serbia, Tajikistan, and Vietnam in the Working Group.

Dr. Mukhamedjanov reported the development of the partnership between the public and private sectors based on the IWRM-FV Project approaches. The WG members resolved to use these approaches for other in regard to other countries.

The issues pertaining to summarizing the results of monitoring of problems of closed basins, which number more than 10 ones worldwide (the largest having no access to the sea), were considered. It was decided to address the International Union for the Conservation of Nature (IUCN) concerning the preparation of a project for joint study of the closed basins problems.

The Australia Irrigation Conference 2012 was held on 26 June.

It was opened by Jan Atkins, Chair of the Australian National Committee. The Deputy Prime Minister of Australia spoke through teleconference bridge, then the Australia Irrigation Minister Peter Toome took the floor.

Then the floor was turned over to the President of ICID Dr. Gao Zhanyi who delivered the report "Water and irrigation for food security". He noted that the population is growing and at the same time the water consumption (viz. irrigation) related food prices are skyrocketing. According to predictions, by 2025 all the southern territories of the Earth will face water shortage. The topic of his next report was "Contribution to food security through optimum water use". Thus, he presented the following priorities and targets to be oriented towards in the nearest future:

Target I. Improving dryland productivity.

Target II. Improving water productivity in irrigated agriculture.

Target III. Enhancing productivity sustainability and reducing water management costs so that food security can be affordable for everybody by 2025.

Target IV. Safe use of unconventional types of water resources in agriculture and aquaculture.

Target V. Water reservoirs to maintain irrigated agriculture.

Target VI. Personal vision.

Target VII. Ground water.

Target VIII. Performance of food supply chain.

Target IX. Support to farmers having small areas.

Mr. Thierry Facon, FAO representative, did a presentation. He focused on the outlooks of irrigation and drainage: what is going to be in 40 years and what issues should be considered in this connection. He raised the following questions:

- Whether irrigation and drainage systems have been operating for the last 40 years and appropriate decisions were implemented as required;
- If no, whether there is a hindrance to implement those;
- Whether our decisions should be revised as well as conception of irrigation and drainage systems;
- Whether the conventional implementation indicators are adequate for new circumstances and set of problems the region is currently faced with;
- What the results are if renewed investments to irrigation and drainage systems will become more effective.

Further, he dwelled upon the following key challenges:

- Well-known challenges (such as climate change, growing competition for water and land resources the shortage of which already takes place, worsened environment, growing poverty and famine);
- Close interaction between water cycle, ecosystems, and users;

- Very complex decision making process;
- There is increasing discrepancy between the officially reported situation in irrigation and real situation;
- Most “old” decisions do no work as expected;
- Conflict policy of problem solving and its inconsistency;
- Irrigation agencies and mission for development.

The ICID Executive Committee stared working since 28 June.

On the 63rd meeting of the International Executive Committee (IEC) of ICID it was decided to adopt the Committee recommendations concerning the inclusion of another category of membership in the form of direct members of ICID, where particular representatives, organizations, and companies can be involved. This requires elaborating further details of the membership dues structure, membership application submission procedure, etc. At the same time, IEC has established a special committee for the development of recommendations on necessary amendments in the Constitution and by-laws so that to have this decision be implemented. Taking into consideration the new direct membership categories recommended by the Committee, the changes have applied to Articles 3, 4, and 5. At that, the main role remains with National Committees. The membership dues structure for direct members relies on the principle according to which they can have a certain financial advantage in addition to the access to the knowledge-sharing platform, and the ICID budget will carry no additional pressure. The major effort has been made for the purpose of ensuring that the membership dues structure is financial attractive for potential members and, at the same time, can bring addition income to the ICID family in whole, whether they are the organizers of ICID events or the Central Office.

In addition, IEC approved the venue of the next future big events of ICID:

- 11th ICID International Drainage Workshop, Cairo, Egypt, 23-27 September 2012;
- 64th Meeting of IEC and 8th Asian Regional Conference, Mardin, Turkey, October 2013;
- 12th ICID International Drainage Workshop, Saint-Petersburg, Russia, June 2014;
- 65th Meeting of IEC and 22nd Irrigation and Drainage Congress, Kwangju (metropolitan city), South Korea, 14-20 September 2014;
- 66th Meeting of IEC and 26th European Regional Conference, Montpellier, France, October 2015;
- 67th Meeting of IEC and 9th Asian Regional Conference, Chiang Mai, Thailand, 2016.

ICID Award WatSave. After consultation with the Secretary-General, the President assigned the Board of Justice which included an Honorary President Prof. Chandra

Madramotoo (Canada) as a convener and Honorary Vice-President Mr. Larry D. Stephens (USA); Vice-President Chaivat Prechavit (Thailand); Vice-President László G. Hayde (Hungary); Vice-President Adam Sangar (Mali) as the members in charge of awarding three annual awards WatSave.

Also, at the end of the day at the 63rd Meeting of IEC they elected Vice Presidents for years 2012-2014. Out of six candidates to this position from France, Canada, Turkey, India, USA, and Indonesia three nominees were selected by secret ballot: Mr. Lori S. Tollefson (Canada), Mr. François Brelle (France), and Mr. Hüseyin Gündoğdu (Turkey).

On the same day, in parallel with that the Australian Conference was held, where they delivered the report "ICID should protect irrigation from hydroegosim". The Conference participants welcomed the issues raised by the report and highlighted the manifestation of hydroegoism in their countries (Japan, USA, India). After the lunch, the presentation "Innovation partnership is the way to improve water and land productivity" was made. The participants showed interest in the situation in the Central Asian region. Having learned about the problems related to transboundary rivers, they asked a question about the hopes for future. Dr. Mukhamedjanov answered that they were hoping to reach an agreement which would meet the interest of all the states in the region.

Sh.Sh. Mukhamedjanov

10TH ANNIVERSARY INTERNATIONAL FORUM "WATER: ECOLOGY, AND TECHNOLOGY"

Moscow, Russia, 5-8 June 2012

"Aquatech" fora are held every two years and originally were held under the aegis of the Ministry of Water Resources of Russia, then the Ministry of Natural Resources. It is noteworthy that the opening of that Forum was attended by its initiator, i.e. former Minister of Water Resources of Russia Mr. N.N. Mikheev as well as by the former First Deputy Minister of Water Resources of the USSR Mr. P.A. Polad-zade, who is currently the Chairman of the specialized organization for water management and construction works "Vodstroy" JSC and President of the Network of Eastern Europe, Caucasus and Central Asia (EECCA) Water Management Organizations.

The Forum agenda included the Exhibition of Water Industry Achievements and Specimen Products which were presented in 835 booths of 30 countries worldwide, on an area of nearly 20 thousand square meters, which was much more than the area and number of the exhibits presented on the World Water Forum in Marseille in 2012.

Among the participants, apart from Russia, there was a wide choice of manufacturers from Germany, Netherlands, and China. The participation of the Kazakhstan Water Supply Union headed by our colleagues Mr. Valeriy Syundyukov should not go unmentioned.

Basically, the great range and considerable progress achieved by the water industry of Russia in all the areas related to water supply technology, sewerage system, wastewater treatment, pipe ramming, repair of water supply and sewerage systems is quite impressive.

The subject area of the conferences and workshops within the Russia Forum is also linked with the same basic areas. Unlike previous similar events, where the issues associated with water resources and water sector management and governance, irrigated farming were given much attention, in the agenda of that Forum, consisting of 17 conferences, workshops, roundtables, only one conference according to its name (Russia Multipurpose Water-Resources Scheme: Survival or Development?) was to touch upon the prospects of the water industry of the country. All the reports highlighted the focus on water supply and sewerage systems issues. One is getting the impression that the Russia multipurpose water-resources scheme has neither hydropower system, nor irrigation system, and nor drainage system and that these branches of the sector have no problems at all. While the fundamental report prepared by the Information Center (Rybalskiy, Omelyanenko, et al.) of the Russia Ministry of Natural Resources by order of the latter illustrates the presence of serious problems which are escalating from year to year because of deficit of financial resources and attention to the multipurpose water-resources scheme of the country.

It is also interesting that both the Ministry of Natural Resources and Federal Agency of Water Resources, and the Ministry of Agriculture almost did not take part in the organization and holding of the Forum as well as in its preparatory works. That is why the Forum turned out to become “rich” in the issues related to water supply and sewerage systems the progress in which one can not only rejoice at, but also feel admiring envy.

V.A. Dukhovny

MEETING OF THE WORKING GROUPS OF THE UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE (UNECE) CONVENTION

2-4 July 2012, Geneva

The meeting of the Working Groups followed the **16th meeting of the Working Group of the Water Initiative of the European Union for the EECCA area.** It was chaired by the Director of the Water Resources Department of Romania Mr. Georg Konstantin, representatives of Economic Formation of Society Mr. Xavier Leflaive and UNECE Bo Libert. The meeting was mainly focusing on the conduction of National Political Dialogues (NPD) on IWRM implementation and water supply and sanitation (WSS) services within the European Union Water Initiative (EUWI). The Program has been functioning since 2006 in Armenia, Kyrgyzstan and Moldova and since 2010 in Azerbaijan, Georgia, Tajikistan, and Turkmenistan. At present, at the

request of the Kazakhstan Government, the NPD Program is launching in Kazakhstan. The participant countries reported the results and achievements obtained in the course of that activity:

• Armenia: has accomplished the IWRM implementation program in the Marmarik river basin, then in the Debred river basin. The pilot project for the payment for the ecological services provided by the system was established in 2010-2012. Its report "Overall results and lessons learned from the IWRM implementation based on Armenia NPD targeted results, including economic and financial disciplines".

• Azerbaijan started its activity from the preparation of a bilateral agreement with Georgia on the Kura river within the ENVSEC Program and from the preparation of a project for monitoring of the improvement of water saving facilities in Azerbaijan, as well as from two pilot projects.

• Georgia has joined Azerbaijan in the Kura river project implementation; established a special committee; prepared a report about the water activities in Georgia, including the development of tools for planning future dialogues on IWRM.

• Kyrgyzstan started its NPD related activities since 2008, having focused on the establishment of the Chu river basin council and working out of a plan of actions aimed at providing the country with safe drinking water. In 2010 they developed a strategic plan of financing WSS related works; and now they launched a similar project of NPD on Issyk Kul lake. An international expert for those works was provided by Denmark.

• Moldova was most successful in three political areas, including the order by the Government concerning the catchment of wastewater discharge from municipal sources. A government decree was prepared regarding the attainment of water and land monitoring goals as well conciliation commissions on water and health issues were established. The last NPD stage provides for taking into account climate change.

• Russia has focused on the improvement of legal, institutional, and regulatory frameworks by involving the private sector in WSS along with the working out of recommendations and development of a federal law on water saving and sewage system.

• Tajikistan has developed a working chart of IWRM. Major emphasis was made on supporting the development of water sector, its strategy, including elaboration of all legal and institutional frameworks.

• Turkmenistan arranged another meeting in April 2011 and established an inter-ministerial experts group for revising the national laws on water allowing for the adaptation of the IWRM principles, stated forth in the Convention 1992, to Turkmenistan conditions. A report on possible Turkmenistan transition to the basin method was prepared.

• Ukraine has prepared two sets of political documents:

  – Convention of the European Union and Ukraine water policy adaptation in accordance with the UNECE Guidance on Water and Adaptation to Climate Change;

– ToRs for future projects on climate change in the Dnieper river basin.

Furthermore, a proposal on a roadmap for the reform aimed at the creation of legal and institutional contexts for supporting the inter-ministerial coordination in water resources volume.

Prof. V.A. Dukhovny in his comments to that issue highlighted that sub-national dialogues had been organized within the IWRM-Fergana Valley Project in Kyrgyzstan, Tajikistan, and Uzbekistan much earlier, as far back as 2001, by establishing national coordination groups headed by deputy ministries with the involvement of all ministries interested in the development of water sector. Prof. Dukhovny made a presentation on the building the Central Asian organizations' capacity in IWRM implementation; the presentation demonstrated the leading role of Uzbekistan where the IWRM implementation scale had come to 400 ths ha. Also, they mentioned of the necessity to develop that program in the form of setting up of knowledge dissemination centers for WUAs and farmers.

The Deputy Director of the Kyrgyzstan Water Resources Department Mr. Ch. Uzakbaev spoke about the development of the international water law.

An IWMI representative Mr. O. Anarbekov developed a questionnaire for the assessment of IWRM implementation in the EECCA countries. However, he was given a remark that those implementation principles differ radically from the ones developed by SIC ICWC and IWMI within the IWRM-FV Project. It seems that Uzbekistan and Kazakhstan, Convention member countries, receive less attention from donors than the countries that reject the Convention (Kyrgyzstan and Tajikistan).

The main purpose of the meeting of two working groups, Transboundary Water Assessment and IWRM, was to review the fulfillment of the working plan for 2010-2012 in order to implement the Convention 1992 and consider the proposals on the program development for 2013-2015.

The meeting noted a significant progress in the promotion of the ratification process. Turkmenistan stated about the organization of a political process which submitted a Convention accession proposal to its Government for consideration. Kyrgyzstan decided to join the Protocol on Water and Health without acceding to the Convention. The participants discussed the Convention implementation mechanism with respect to transboundary groundwater.

The meeting considered the draft decision of the accession of countries that are not UNECE members. Three options were presented: Option A was rejected right away, and Options B and C were admitted to examination, for which the Convention Presidium was to prepare a document for final consideration. Convention parties had to consult their governments regarding possible decisions on that issue and inform the Secretariat before 15 August 2012 so that the Secretariat could prepare appropriate decisions to be considered by the 6th Session of Meeting of the Parties in Rome on 28-30 November 2012.

During a discussion, Prof. Dukhovny expressed a doubt as follows (which was disregarded): realizing the political significance of the accession of countries that are

not members of UNECE, it makes sense to unlimitedly expand the Convention scope, especially taking into account that now with limited number of its members the financial resources of UNECE are insufficient.

The draft Program of Work for 2013-2015 was discussed in detail. Some comments were given with regard to that Program, i.e. to include in the Program for 2013-2015 a number of political issues associated with IWRM implementation oriented to the development of public participation, involvement of women, and attainment of ultimate water saving objectives. A few comments were voiced, which were documented in the form of a letter and addressed to the Convention Secretary Ms. Bernardini as well as to the Chairs of the both Working Groups. The letter said that Program Scopes 1 and 2 were mainly oriented to the states that were not parties to the Convention and, moreover, some of them (Tajikistan and Kyrgyzstan) always argued against the both Conventions of 1992 and 1997, which allegedly did not meet the interests of upstream catchment areas. The situation is taking a quite strange turn, because the Convention countries (Kazakhstan and Uzbekistan) are covered by the Program of Works to very low extent. The issue of model regulations on transboundary groundwater faced a detailed hearing. It should be noted that these regulations are more sophisticated and are a quite good instrument, but one cannot say much for the documents explaining the provisions of the Convention on Surface Water. July 31, 2012, is set as deadline for submitting concluding comments.

The parties also considered the special publication of the assessment of the relationship between water, food, and energy. It was suggested to select basins for special performance of such an assessment of the food-energy nexus. Prof. Dukhovny proposed to select the Amudarya river basin as such a basin to assess, taking into consideration of the presence of certain disagreement over this basin and include also environmental impact in the assessment process.

At the meeting, they also informed about the conduction of the Convention 20th Anniversary Celebration Special Meeting in Finland in September 2012. A sharp remark was voiced by the chair of the Meeting of the Parties to the UNECE Water Convention Ms. Sibylle Vermont regarding the effectiveness of RIO+20 when it comes to further overcoming of water crisis problems. In her opinion, the RIO+20 documents have a one-sided orientation to water supply and sewage without allowing for the necessity to develop water infrastructure in the sphere of production development. One should note that a similar opinion was expressed at a meeting of the WWC Board too. The issue of the synergy between the UN Water Convention 1997 and UNECE Water Convention 1992 was considered as well. They mentioned that speeding up of the ratification of the UN Convention is very important. A representative of the Green Cross International organization told that for the time being 26 parties had approved the Convention and 9 more countries are required for the Convention could come into effect. At that they stressed that some provisions of accompanying documents of the European Convention could sharply strengthen the effectiveness of the UN Convention. The issue of the necessity to include the works related to the specification of the provisions of the both Conventions “on equitable and sound management” of transboundary waters into the plan of the Legal Issues Council and following

developing practical recommendations was raised again. We submitted appropriate proposals to the Legal Issues Council as far back as one year ago.

It was also informed that Tajikistan would host the Assembly devoted to Rio+20.

V.A. Dukhovny

IN-DEPTH ANALYSIS OF INTEGRATED WATER RESOURCES MANAGEMENT IN CENTRAL ASIA

The workshop on "In-Depth Analysis of Integrated Water Resources Management in Central Asia" sponsored by SDC, UNECE, European Commission and World Bank, USAID, DfID through the Multi-donor Trust Fund and SECO Trust Fund was held in Almaty city (Republic of Kazakhstan) on July 4–6, 2012. The workshop also was supported by EC IFAS and SIC ICWC.

Seventy five persons from six regional countries (including the delegation from Afghanistan), regional organizations and international agencies participated in the workshop.

Prior to the workshop, the World Bank circulated the document which presented the following background for the Forum:

The Central Asian states and Afghanistan share water resources of the transboundary rivers – Syrdarya and Amudarya, as well as exploit infrastructures constructed along these rivers. Unequal water resources allocation requires coordinated guidance of social and economic process. Importance of coordination is increasing as the countries aspire to achieve their national development goals, as well as water and energy self-reliance embodied in infrastructure designs in all the countries. In addition, new serious problem objectives appear in the sphere of water resources use associated with population growth and projected consequences of climate change.

The countries aspire to resolve problems, and the process of managerial decision-making will increasingly become more complicated in terms of changes in the resource base/potential, as well as development priorities of the counties within the Aral Sea basin. Existence of a constructive and cutting-edge knowledge base to manage water resources where available systems and capacities in the region as well as new technologies and tools are used to the maximum is one of the required components for managing these issues. The IFAS Program of the Aral Sea Basin – 3 fully reflects this need.

It is considered as a positive point that experienced managers on water resources management are available and there were previous investments in knowledge base on development of integrated water resources management. The action is continuing, including IFAS initiatives in modeling, the water sector reforming program in some countries (for instance, Kazakhstan and Tajikistan), and initiatives of donor institutions

in support of information development and capacity building (for example, CAREWIB project (Regional Information Base of Water Sector in Central Asia) funded by the Swiss government, Central Asia Energy-Water Development Program funded by World Bank, UN, Institutional Strengthening Program EEC UN-GIZ). However, unsolved issues remain, and there are capacities to render assistance at national and regional levels to adopt an advanced toolset for efficient and sustainable water resources management within the republics and establish interstate resources exchange.

During the workshop, issues on how advanced approaches and new analytical tools can facilitate improved information collection, modeling and skills of integrated water resources management were discussed. Capacities and priorities for in-depth analysis in the six countries of the Aral Sea basin and in regional institutions in Central Asia were identified through discussions.

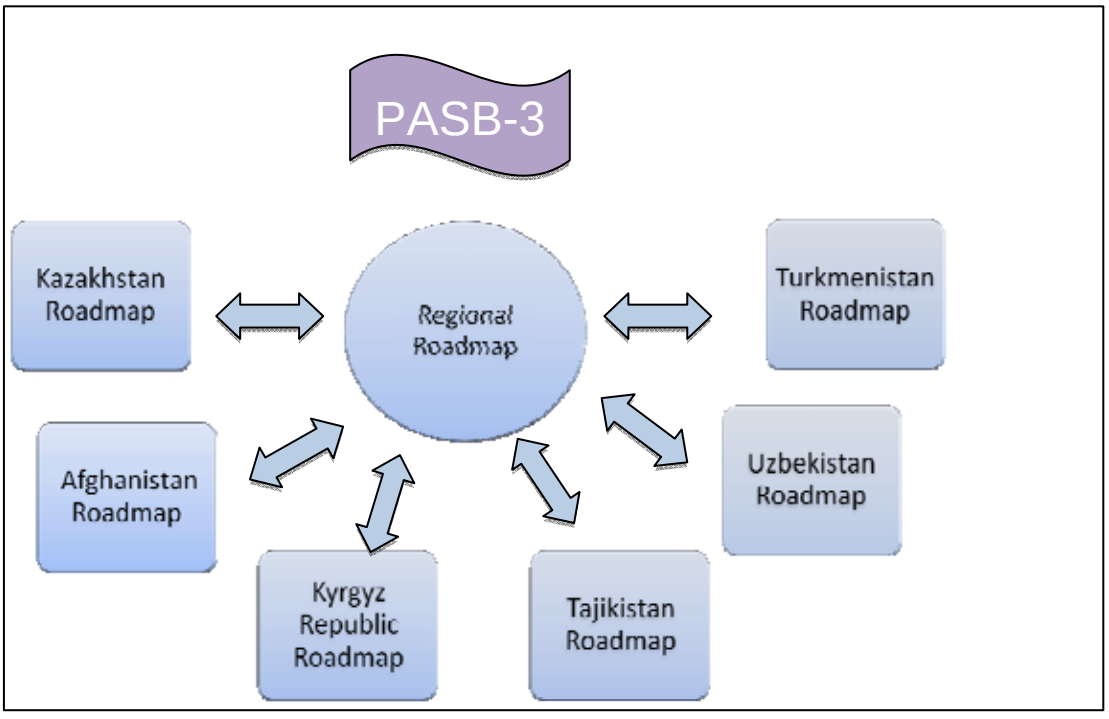
Discussions on three key issues of comprehensive decision support system in the sphere of integrated water resources management were organized:

(i) information base,

(ii) analysis (modeling)

(iii) capacity building (including of institutions).

As a result of the three-day discussions, a draft Roadmap was proposed for the establishment of a single regional information space in furtherance of integrated water resources management.



The Roadmap includes seven components: six national and one regional ones; the latter is for balancing national priorities in the utilization of water resources within the Aral Sea basin and their coordination with relevant limitations and needs in the region.

For elaboration of the Roadmap, the workshop participants agreed on the following eight fundamental principles:

COOPERATION: 1. Balance of national and regional interests (sense of process ownership); 2. Emphasis on national and regional consultations.

KNOWLEDGE: 1. The system of models is intended for regional and national priorities and limitations; 2. Information is presented in an accessible and user-friendly form.

OPEN RESOURCES: 1. Use open information resources to the maximum; all information products and models should be in public use; 2. Data from "above" and from "the grass roots" should be properly aggregated.

CAPACITY and ORGANIZATION: 1. Available human and technical resources should be strengthened by using advanced technologies; 2. Institutional and financial sustainability of the system has to be provided.

Every Roadmap should include three components: data, models, and capacity building.

Regarding data, the workshop participants came to an agreement on the following areas of focus:

- Full inventory of data sources (metabase on all data accessible from both "the above" and "grass roots");
- Conducting an assessment of the needs for and priorities in data proceeding from modeling objectives;
- Creating a platform of publicly accessible information and knowledge products;
- Compatible data on format and with operating systems;
- Integrating data from the above" and "grass roots"'
- Providing coordination of a data collection network, data generation and management;
- Establishing principles for data exchange, viz. concluding an agreement on data exchange and making data publicly accessible;
- Developing and disseminating user-friendly information products (e.g., newsletters of United Nations Regional Center for Preventive Diplomacy for Central Asia).

Regarding the models:

- Assessing the utility and accessibility of available models and plan developing missing models for:
- Planning taking into account investments, exploitation, climate change;
- Real-time operation (including floods and water shortage);

- Making models on specific issues (for example, management of water quality and salts, water saving, etc.);
- Organizing technical workshops to identify the needs for models at the national and regional (basin) levels (water balance, simulation of systems, optimization, multi-criteria analysis, etc.) as well as the needs for relevant data.
- Creating or improving models and their linkage;
- Developing simulation visualization systems and a communication system.

Regarding capacity building, the participants came to an agreement about the following areas of focus:

- Assessing the needs for capacity building;
- Creating a network of professionals (including higher-education institutions and academic institutes), holding professional forums;
- Developing trainings and workshops;
- Building up a long-term system of capacity building;
- Establishing working group of experts?
- Involving decision-makers?
- Strengthening the equipment of institutions and providing a reliable communication system.

The World Bank will prepare a detailed report based on workshop's findings which will be circulated to the countries for agreement in the mid-August. In consultation with the countries, a project proposal for Roadmap implementation is to be prepared by November.

V.I. Sokolov

FINAL REGIONAL WORKSHOP WITHIN THE JOINT UNESCO-IHE AND SIC ICWC CENTRAL ASIA PROJECT "CAPACITY BUILDING IN THE INTEGRATED WATER MANAGEMENT AND PLANNING IN CENTRAL ASIA"

1. SIC ICWC Central Asia (CA) together with the Institute for Water Education (UNESCO-IHE, Delft, Netherlands) is completing the implementation of the project "Capacity Building in the Integrated Water Management and Planning in Central Asia" (hereinafter referred to as Project); the duration period is from 2009 to 2012.

Development of a training system (personnel development) in the water sectors of the five CA countries is one of the Project objectives.

In 2010-2011, a series of regional workshops on training of national trainers (training of trainers) with the assistance of leading experts from the foreign project partner (Institute for Water Education) and with the utilization of the SIC ICWC CA potential within the framework of four training areas (Blocks) was held:

- Block 1. Integrated Water Resources Management (IWRM);
- Block 2. Improvement of Irrigated Agriculture (IIA);
- Block 3. International Water Law and Policy (IWLP);
- Block 4. Regional Cooperation in Transboundary Rivers (RCTR).

For each training block, their leaders (regional trainers), leading experts of SIC ICWC CA, developed training programs, training modules, and prepared a package of required training materials.

2. The next stage of the project implementation as it pertains the training process provided for the organization of national workshops (trainings) in each of the five states of the region:

1) In Uzbekistan, three workshops with account of regional specifics of the republic were held. The workshops were held in Tashkent (September 12-14), Samarkand (September 15-17), and Fergana (September 19-21). The themes of the workshops were as follows: "Organization of hydrometry, scheduling of water use, and improvement of WUA function", which were in line with the themes of the relevant modules of training Blocks 1 (IWRM) and 2 (IIA). Ninety nine water sector specialists were trained.

2) In Kazakhstan, 2 workshops (November 8-12, 2011) were held: in the South-Kazakhstan province (Shymkent town, November 8-10) and Kyzylorda province (Kyzylorda town, November 11-12). The workshop's themes covered all the 4 training Blocks (IWRM, IIA, IWLP, and RCTR). Fifty two specialists were trained.

3) In Kyrgyzstan, the workshop was held on December 8-9, 2011 (Bishkek city), within twenty nine experts were trained. In Turkmenistan, the workshop was held in Ashgabat on January 26-31, 2012, where twelve specialists were trained. In Tajikistan, the workshop was held in Khudjand (Sogd province) on February 16-17, 2012, within which twenty water sector specialists were trained. The themes of the workshops in Kyrgyzstan, Turkmenistan, Tajikistan, and Kazakhstan covered all the 4 training Blocks (IWRM, IIA, IWLP, and RCTR).

Totally, 8 workshops were held in 5 CA states, and 212 experts were trained.

Required assistance and support in organizing and holding national workshops were rendered by governing bodies of Chief Water Agencies of the CA states[2], and national trainers who were trained at regional workshops were direct organizers of the

[2] 1. Water Resources Committee of the Ministry of Agriculture and Water Resources of the Republic of Kazakhstan; 2. State Committee of Water Resources and Land Reclamation of the Kyrgyz Republic; 3. Ministry of Land Reclamation and Water Resources of the Republic of Tajikistan; Chief Water Administration of the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan; Ministry of Water Resources of Turkmenistan.

workshops. SIC ICWC CA provided methodical, consulting and other assistance in the conduction of trainings.

3. The final regional workshop on the Project was held in Tashkent on July 6-10, 2012. The workshop participants were as follows: specialists from water management organizations and faculties of specialized universities in the regional countries, leading experts of the Institute for Water Education IHE-UNESCO and SIC ICWC Central Asia, a number of national and regional projects, other stakeholders.

Totally, about 50 participants took part in the workshop.

3.1. First day of the workshop (July 6).

Mr. R.A. Mamutov, Deputy Head of Chief Water Administration (CWA), Deputy Minister of Agriculture and Water Resources (MAWR) of the Republic of Uzbekistan, opened the workshop and made a key-note address.

The key-note address reflected the principal lines of the water sector reforms in the republic, main achievements during the years of independence, role of international legal frameworks of transboundary water resources management for strengthening water cooperation in the region. The report particularly emphasizes the importance of enhancing the capacity of water sector specialists for the implementation of national and regional water policies and need for further professional development at the national and regional levels.

Mr. Yu.Kh. Rysbekov, Leader of Training component of the Project, presented the general information on the joint Project (goals, objectives, budget, activities provided for in the Actions Plan, progress, and main results).

It was noted that in general the planned activities under the Training component of the Project were executed completely and within the fixed timeframe.

Information about the Project was also given in the presentation of Dr. K. Prasad (UNESCO-IHE). In addition, activities of the International Institute for Water Education (Netherlands) were introduced to the auditory. Particularly, it was noted that 97% of the activity of the Institute is financed by the Netherlands Government and only 3% of the Institute costs are covered from other funds.

The issues of having Master's and PhD courses with receiving two diplomas (in two countries) and the cost of study in the Institute for Water Education as well as its international relationship aroused the interest of the auditory. The questions were asked by Dr. G. Stulina (SIC ICWC Central Asia), Prof. N. Kipshakbaev (Kazakhstan branch of SIC ICWC), Dr. E. Drugaleva (National Agrarian University, Kyrgyzstan), Dr. S. Turaev (University of World Economy and Diplomacy, Uzbekistan), Prof. A. Salakhutdinov (Tashkent Institute of Irrigation and Melioration), Prof. N. Skripnikov (Tashkent State Juridical Institute), etc.

Then, reports of heads of the delegations and national trainers from CA states on national workshops and trainings (NWT) were made and relevant discussions were organized.

On the first day of the workshop, reports on NWT that were held in Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan were heard and discussed.

3.2. Second day of the Workshop (July 7).

The second day started with hearing and discussion of the report on NWT in Uzbekistan.

In addition to the discussion on NWT, a general discussion on "twinned" Blocks concerning the synergy between them and their interconnection was organized:

- Blocks 1 (IWRM) and 2 (IIA);
- Blocks 3 (IWLP) and 4 (RCTR).

The NWT-related issues brought up for discussion by the workshop participants as well as higher education institute faculties are given below.

The second day of the workshop was ended with the presentation of Prof. Dukhovny titled "Capacity Building and Human Resources Development for Improving Water Management and Water Use in Central Asia".

Among others, the presentation reflected the following issues:

- Key challenges (climate change impact, demographic pressure, weakness of economic foundations, inefficient water management, etc.);
- Estimation of usable water resources available in the region; demand for water under various social-economic scenarios;
- Food security and ways to provide it; steps made to implement the IWRM principles ("IWRM-Fergana" Project, etc.);
- Transboundary water cooperation in the Aral Sea basin (ASB);
- IWRM as a single goal to overcome water scarcity in ASB;
- Capacity building as the basis for efficient water management including development of information systems, analytical tools, etc.;
- Training sequence: from knowledge generation (researches) towards its dissemination (training centers) and practical implementation (application);
- Creation of common information space for training through providing integrated information resources, guaranteeing the compatibility of information systems by means of advanced information technologies by raising trust and interest in joint actions with involving regional and other international organizations;
- Assessment of the needs for training (main areas of focus, target groups);
- Improvement of training effectiveness (interactive forms of training, collaborative training, broad involvement of women, etc.),
- Establishment of national training centers in each state of Central Asia as well as a single coordinating body, i.e. an economically viable Regional Training Center, with providing its financial sustainability.

3.3. Third day of the Workshop (July 9).

The third day of the workshop started with the presentation of Prof. V.A. Dukhovny which reflected, among others, the issues of investment to the development of water management and implementation of cutting-edge irrigation technique by the example of Qatar and other states suffering from water deficit, general trends and the role of education in improving the efficiency of water resources management.

Some issues were of specific interest of the workshop auditory: desalination of water which is extracted concurrently with oil, and Qatar vision on the prospects of water sector development, i.e. expansion of irrigated areas under crops (mainly, under wheat) at critical water deficit.

Mr. Yu.Kh. Rysbekov, Leader of Training component of the Project, presented brief information on the organization of NWTs in CA countries. As mentioned above, under the Project, totally 8 NWTs were hold, in particular: three workshops in Uzbekistan, two in Kazakhstan, and one in Kyrgyzstan, Turkmenistan, and Tajikistan each.

Other quantitative data:

In total, 212 experts were trained at 8 NWTs, in particular:

- Uzbekistan – 99,
- Kazakhstan – 52,
- Kyrgyzstan – 29,
- Turkmenistan – 12,
- Tajikistan – 20.

31 experts were selected (recommended) as prospective trainers, in particular:

- Uzbekistan – 9,
- Kazakhstan – 8,
- Kyrgyzstan – 6,
- Turkmenistan – 4,
- Tajikistan – 4.

In total, 34 experts were moderators/lectors at NWT, in particular:

- Uzbekistan – 9 (including 2 regional trainers (RT), 2 national trainers (NT), 5 invited lectors),
- Kazakhstan – 9 (including 2 regional trainers (RT), 2 national trainers (NT), 5 invited lectors),
- Kyrgyzstan – 6 (including 4 NTs, other lectors – 2),
- Turkmenistan – 10 (including 2 NTs, other lectors– 8),
- Tajikistan – 5 (including 3 NTs, other lectors – 2).

A Regional Trainer Mr. N.N. Mirzaev, Leader of Block 1, rendered consulting assistance to the NWTs in Turkmenistan and Tajikistan. The approaches, methods, and training materials developed and tested by SIC ICWC Central Asia together with its

foreign partners from the Institute for Water Education (UNESCO-IHE, the Netherlands) were used during all the NWTs.

After having considered the reports on NWTs and heard brief summaries of those, a general discussion on the NWTs in CA countries was organized; there the NWTs were assessed (key problems, quality of training and training material, etc.) by:

- National trainers,
- Regional trainers – leaders of the 4 training Blocks,
- University faculty and invited lectors-workshop participants and other stakeholders.

After the discussion, curricula and other training materials on the four training Blocks were presented by their leaders (developers):

- N.N. Mirzaev – Block 1 (IWRM),
- M.G. Horst – Block 2 (IIA)
- Yu.Kh. Rysbekov – Block 3 (IWLP),
- A.G. Sorokin – Block 4 (RCTR).

Within Block 4, a joint presentation was made by I.F. Beglov and D.A. Sorokin on "Modeling, Information System and Other Decision Support Tools" directly related to the issues of Block 4.

Discussions regarding the presented curricula and other training programs on each training block were organized. The leaders of respective training blocks were moderators of the discussions (as well as in other days of the workshop).

All "target groups", i.e. the workshop participants (NTs, RTs, representatives of projects and the foreign partner, university faculties, other stakeholders), took part in the discussions.

The third day of the workshop ended with the presentation of Dr. O. Islamova on "Main Outcomes of the First Stage of RESP-II Implementation (2009-2012) and the Activities Planned for the Second Stage (2012-2015)" with the focus on training dimensions of RESP-II (the project was being implemented in 7 districts of 7 provinces in Uzbekistan).

3.4. Fourth day of the Workshop (July 10).

On the fourth day of the workshop, a general discussion on the presented curricula for the training blocks with the view of their improvement was continued.

Also, the presentations of the representatives from the CA countries on the prospects of the training system development at the national level and the presentations of representatives from higher institutions on the issues of incorporating the training blocks curricula into national educational systems were made.

The presentations of university faculties and a number of other participants of the workshop emphasized the need for legal framework for the training system.

Particularly, Prof. V. Dukhovny (SIC ICWC), Prof. N. Kipshakbaev, Prof. A. Tleukulov, Associate Prof. K. Ashiryaev (Kazakhstan), Dr. E. Drugaleva, E. Sakhvaeva (Kyrgyzstan), Prof. A. Salakhutdinov (Uzbekistan), etc. took the floor too.

Discussions on the NWTs in the CA states were generally coordinated by Dr. K. Prasad (UNESCO-IHE) and the workshop facilitator, while the discussions on each training block were coordinated by their leaders (regional trainers) respectively.

Dr. M. Pinkhasov (SIC ICWC) and Dr. K. Prasad (UNESCO-IHE) delivered their presentations on general issues on business planning for Training Centers.

In addition, the workshop participants were introduced to the SIC ICWC CA activity towards the promotion of training of regional water sector specialists abroad under various international educational programs, in particular:

- In Germany: training of water specialists from CA countries within the LUCA, CLINCA, CAWA projects (lector Dr. G.V. Stulina, SIC ICWC).

  Note: 1) LUCA Project: Land Use, Ecosystem Services, and Human Welfare in Central Asia (2009-2013), study sponsor is the Volkswagen Foundation; 2) CAWA: Regional Scientific Network "Central Asian Water" (2008-2011), sponsor is the German Federal Foreign Office; 3) CLINCA: Climate Change Network for Central Asia (2009-2014), sponsor is DAAD (German Academic Exchange Service).

- In Israel (presentation by Dr. O. Eshchanov, SIC ICWC): training within the framework of MASHAV Courses (Israel's Agency for International Development Cooperation under the Ministry of Foreign Affairs of Israel) and CINADCO (Center for International Agricultural Development Cooperation, unit of the Ministry of Agriculture and Rural Development of Israel). Particularly, from 2007 to 2012, 83 specialists from the CA countries were trained in the MASHAV-CINADCO Training Center, in particular, from Kazakhstan – 14 people, Kyrgyzstan – 16, Tajikistan – 15, Turkmenistan – 10, and Uzbekistan – 28.

- In India (presentation of Sh. Zaitov, SIC ICWC): in the Indian Institute of Remote Sensing (IIRS), within the International/Indian Technical and Economic Cooperation (ITEC) Programme. During the period of 2000-2012, 149 experts from the CA countries had trainings within the Program (in general, training in GIS technologies), including from Kazakhstan – 37, Kyrgyzstan – 44, Tajikistan – 16, Uzbekistan – 52.

Prof. Dukhovny told about the issues related to the postgraduate courses in Germany and eligibility criteria (command of the English language, etc.) in a number of other countries (Dundee University in Scotland, Kazakhstan-German University). Prof. N. Kipshakbaev (Kazakhstan), Dr. E. Drugaleva (Kyrgyzstan), Prof. A. Salakhutdinov, Dr. S. Turaeva (Uzbekistan), etc. participated in the discussion.

The fourth day of the workshop, as well as the workshop as a whole, was concluded with the presentation on the Project "Capacity Building Strategy in the Sphere of Integrated Water Resources Management in Central Asian Countries" for a medium-term period (4-5 years), which reflected the Training Development Strategy (TDS) in the context of business planning and path-forward plan (Yu.Kh. Rysbekov).

The workshop participants approved the presented project and prospective vision on the development of professional development system in the water sector in the CA countries.

The main provisions of the TDS project include motivation and main goals, introduction and conclusion, and the body consisting of four sections:

I. Planning of training development prospects with specifying the activities (identification of target group, needs for professional development, etc.),

II. Main stages, their duration and estimated cost of planned activities (with breakdown y stages),

III. General philosophy, ultimate goal and prospects.

IV. Main positions of the draft business plan for TC.

(Note: the TDS project was presented to the SIC ICWC Governing Body separately)

5. This section of the Report in enquiry provides answers to a range of the questions directly pertaining to the quality of the prepared training materials on the mentioned training blocks (IWRM, IIA, IWLP, RCTR) of the Project, as well as question related to the TMs incorporation in training and educational process on the whole.

As mentioned above, the first versions of the curricula and modules given at the regional workshops held in 2010-2011, and notes and proposals submitted by university faculties. In particular, the recent notes and proposals on the final version of the curricula were received from the faculties of the Tashkent Institute of Irrigation and Melioration, or TIIM, (Blocks “IWRM” and “IIA”), Kazakhstan-German University (Block “IWLP”), etc.

Moreover, SIC ICWC Central Asia disseminated the training materials (TMs) among the staff of national and regional projects (“IWRM-Fergana”, WPI-PL, RESP-II, etc.) and leading experts of SIC ICWC proper to get as well an “internal review” of the training materials prior to their publication. The notes and proposals received from reviewers as those pertained to the Block Leaders were taken into account by them.

The TMs on all the training Blocks (in hard copy, viz. brochures, and on CDs) were disseminated among the faculties from the following higher education institutes of the regional countries:

- Kazakhstan National Agrarian University (KAZNAU);
- Kazakhstan National Technical University (KAZNTU);
- Kyrgyzstan National Agrarian University (KYRNAU);
- Tajikistan Agrarian University, Hydromelioration Systems Operation Sub-(OHS) Department;
- Polytechnic Institute of the Tajikistan Technical University (Khudjand, Tajikistan), Agrarian Technologies Sub-Department (sent by a special delivery);
- Turkmenistan Agricultural University (TAU);

- Tashkent Institute of Irrigation and Melioration (TIIM), Hydromelioration System Operation and Water Resources Management and Environment Sub-Department;
- University of World Economy and Diplomacy UWED (Tashkent), World Economy and International Economic Relations Sub-Department;
- Tashkent State Juridical Institute (TSJI), Environmental and Agrarian Law Sub-Department;
- Tashkent State Agrarian University, Agronomic Department, Farming and Land Reclamation Fundamentals Sub-Department (sent by a special delivery).

The TMs on the training blocks were also disseminated among the staff of International Water Management Institute (IWMI), and the following projects: RESP-II (Rural Enterprises Support Project – Phase II), WPI-PL (Water Productivity Improvement at Plot Level), FWRMP-II (Fergana Valley Water Resources Management Project), IWRM-Zerafshan, IWRM-Fergana, non-governmental non-commercial organization "Durnukly Osush" / "Sustainable Department" (Turkmenistan) in order to be used for training purposes.

The faculty of Kazakhstan-German University, Eurasian Center for Food Security under the Moscow State University, Coordinator of UNDP Water Program for Central Asia, etc., which planned to take part at the workshop but were not able showed the interest in getting a package of TMs on the training blocks.

Some issues raised by workshop participants concerning the capacity building of water sector specialists, improvement of TMs and incorporation of those in training process (and educational system in general) are as follows:

- Need for detailed coverage of the issues of climate change and its impact on water resources in the TMs (Prof. N. Skripnikov, TSJI, Uzbekistans),
- Issues related to issuing certificates after the accomplishment of courses and their recognition; incorporation of the TMs in accredited educational institutions (Dr. S. Turaeva, UWED, Uzbekistan, Dr. E. Drugaleva, Kyrgyzstan, Prof. A. Salakhutdinov, TIIM, Uzbekistan, Associate Prof. K. Ashiryaev, KAZNTU, Kazakhstan, etc.),
- Development of an educational strategy in each implemented project (G. Kudaybergenova, IWRM-Zarafshan project, Uzbekistan),
- General ideology and general approaches to IIA in the CA countries, issues of water use charge, etc. (Prof. N. Kipshakbaev, Kazakhstan, A. Kadyrbekov, Kyrgyzstan, Dr. N. Garaev, D. Kholmatov, A. Sattorov, Tajikistan, N. Garaev, Turkmenistan Agricultural University, M. Akmuradov, Turkmenistan) are required, keeping in sight drainage issues (Dr. A. Abirov, TIIM, Uzbekistan) too,
- Differentiation of the needs for knowledge for target groups and regions of a republic, establishment of Centers for Professional Development (N. Mamataliev, Kyrgyzstan),
- Elaboration of a module for the introduction of international standards into national laws (E. Sakhvaeva, Kyrgyzstan), training of trainees based on the experience of

practical works of joint river commissions (G. Satymkulova, Commission CHU-TALAS, Kyrgyzstan), basin councils, and issues regarding the development of Basin IWRM Plans (O. Kystaubaev, Kazakhstan),

- Wise simplification of the materials on the IWLP Block taking into account target groups (E. Sakhvaeva, Kyrgyzstan, S. Davlatov, Tajikistan),
- Importance of the relationship with other national and regional projects that have training components (O. Jumadurdyev, Turkmenistan),
- Training efficiency depends on training methods (Dr. E. Drugakeva, Kyrgyzstan, Prof. A. Salakhutdinov, Uzbekistan, etc.).

Presentations on the TMs implementation in national educational standards were presented by Prof. A. Tleukulov (KAZNAU), Associate Prof. K. Ashiryaev (KAZNTU), Dr. E. Drugaleva, Dr. B. Askarakiev (KYRNAU). Concrete suggestions on the introduction of the TMs on the training blocks were made by Prof. A. Salakhutdinov (TIIM). Among others, he proposed to incorporate the TMs on the IWLP Block into the educational standards in TIIM for bachelor's courses ("Environment and Water Law" course) and master's courses ("International Relations" course).

With overall high preparedness of the representatives from all the CA countries for the workshop, one should mark out the delegation from Kyrgyzstan which represented more completely in terms of implementing the Project, which told on the quality of the delegation's report and discussion on it. The Kyrgyzstan delegation was composed of trainers on all the four training blocks, who had been trained within regional workshops and conducted national workshops, and by to representatives of higher education institution faculties.

Yu.Kh. Rysbekov

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